State of Alaska Exposure for the Dismantle, Removal, & Restoration Obligations of Hydrocarbon Leases in Cook Inlet

An Assessment of How Current Mechanisms of Non-Bonded Coverage Increase This Risk Over Time

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Abstract

This Master's of Natural Resource Management and Geography project assesses the potential liability the State of Alaska faces with the non-bonded coverage of Dismantle, Removal, and Restoration obligations associated with hydrocarbon leases on state managed lands in Cook Inlet. There are four components to this assessment. First, a Chain-of-Title spreadsheet documents the percentage of Working Interest Ownership held by all companies in study leases from the time of first production through February 2015. Second, a Degrees-of-Separation spreadsheet measures the layers of corporate separation from previous lessees to entities in existence today that could perform obligations. Third, a Special Purpose Entity spreadsheet indicates lease percentages held by companies with corporate histories of less than three years prior to assumption of a Cook Inlet lease. And four, a written opus that describes the relationships between these spreadsheets and how they demonstrate that under current mechanisms of non-bonded coverage the State of Alaska's exposure to Dismantle, Removal, and Restoration liability increases through time as the hydrocarbon reserves in the ground reach the end of productive life.

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List of Acronyms

- AAC.....Alaska Administration Code
- ADNR.....Alaska Department of Natural Resources
- ADOG.....Alaska Division of Oil and Gas
- ANOVA....Analysis of Variance
- AOGCC....Alaska Oil and Gas Conservation Commission
- AS.....Alaska Statutes
- CI.....Cook Inlet
- D&B.....Dun and Bradstreet
- DR&R..... Dismantle, Removal, and Restoration
- FAA.....Financial Assurances Agreement
- LLC.....Limited Liability Company
- ORRI.....Overriding Royalty Interest
- P&A.....Plugging and Abandonment
- PERL.....Pacific Energy Resource Limited Partnership
- PSA.....Purchase and Sale Agreements
- SEC.....Securities and Exchange Commission
- SPE.....Special Purpose Entity
- USGS.....United States Geologic Survey
- WIO.....Working Interest Owners

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Introduction

The State of Alaska's very existence is tied to hydrocarbon resource development. The discovery of commercial quantities of oil at Swanson River in 1957 enabled the territory to make the economic case for statehood in 1959. Unique among the states, at statehood Alaska reserved for itself the mineral rights on lands it selected from the federal government and over its territorial seas, which extend three miles from the coastline. State lands in Cook Inlet have experienced waves of exploration and development, with peak production reached in 1970. Today, Cook Inlet is a mature oil basin with aging oil and gas infrastructure.

The extraction of hydrocarbons from state lands is contractually handled through an oil and gas lease. Leases grant their holders temporal access to specified state acreage along with certain rights and obligations associated with development. Among these is the obligation that upon termination of the lease the lessee, if so directed by the lessor, is required to "remove from the leased area or portion of the leased area all machinery, equipment, tools, and materials…and deliver up the leased area or those portions of the leased area in good condition (ADOG, 2009)". Collectively, these responsibilities are referred to as Dismantle, Removal, and Restoration (DR&R).

Lease language allows for the original lessee to transfer ownership, with the approval of the state, prior to the termination of the lease. This transfer does not indemnify the lessee from any obligations that accrued prior to the approval of the transfer. It does, however, create a situation where the firms responsible for improvements to the land may no longer be present, or in existence, when the accrued DR&R obligations are triggered.

The costs of hydrocarbon exploration and initial infrastructure development are substantial, as are geological and engineering uncertainties. Exploration and development is thus a high-risk business, particularly in the remote and challenging conditions of Alaska. Accordingly, one should expect that the original Cook Inlet lessees were large, well capitalized firms. Oil and gas development globally presents a general trend: as the quantity of economically recoverable reserves is depleted, ownership of leases transfers from large corporations to smaller entities that may find more value in bringing the last production out of mature fields. Although this turnover can be a positive for maximizing resource

recovery, it does present risks for the lessor. Once economic production opportunities have been exhausted, successor lessees may have inadequate financial resources to fulfill DR&R obligations.

The state's exposure to the risk of lessees being unable to perform their DR&R obligations became apparent in March of 2009 when Pacific Energy Resources Ltd (PERL) filed for Chapter 11 bankruptcy. PERL, through its wholly owned subsidiary Pacific Energy Alaska Operations LLC, assumed control of Forest Oil's assets in Cook Inlet late in 2007. Among these were interests in nine fields, three onshore facilities, seven offshore platforms, six platform drill rigs and a stake in the Cook Inlet Pipeline. During bankruptcy proceedings, the Court granted PERL the right to abandon its assets in Alaska and all associated contractual obligations. Should another buyer not be found immediately, the state would have had to cover the cost of supporting this infrastructure until responsibility could be assigned. Fortunately, an entity agreed to purchase a portion of these assets in December 2009, with the remainder sold to another in November 2012.

To insulate itself from the risk of lessee non-performance of DR&R obligations, the state can rely on two types of assurances; bonded, and non-bonded. Bonded assurances are those surety bonds, escrow accounts, or other mechanisms that provide monies the state has unequivocal access to. They are permanent, irrefutable, and immediately available. Non-bonded coverage is simply the capacity of the lessee to meet obligations once Cook Inlet hydrocarbon production has ended. This assurance is dynamic, conditional, and subject to the state's legal ability to ensure performance. The focus of this project is to assess the exposure of the state associated with the non-bonded coverage of DR&R liabilities[1].

Statutory and lease language are read by the state to create two layers of non-bonded assurances. The first is the financial capacity of current lessees to perform. This capacity can change rapidly, subject to internal and external drivers. The second is the financial wherewithal of previous lessees. Under the chain-of-title theory, the state assumes DR&R liability accrues the moment the infrastructure is installed, allowing it to secure obligation performance from all lessees at that point forward. The capacity of prior lessees is similarly as dynamic as today's lessees, with the added complication of finding companies that exist across time.

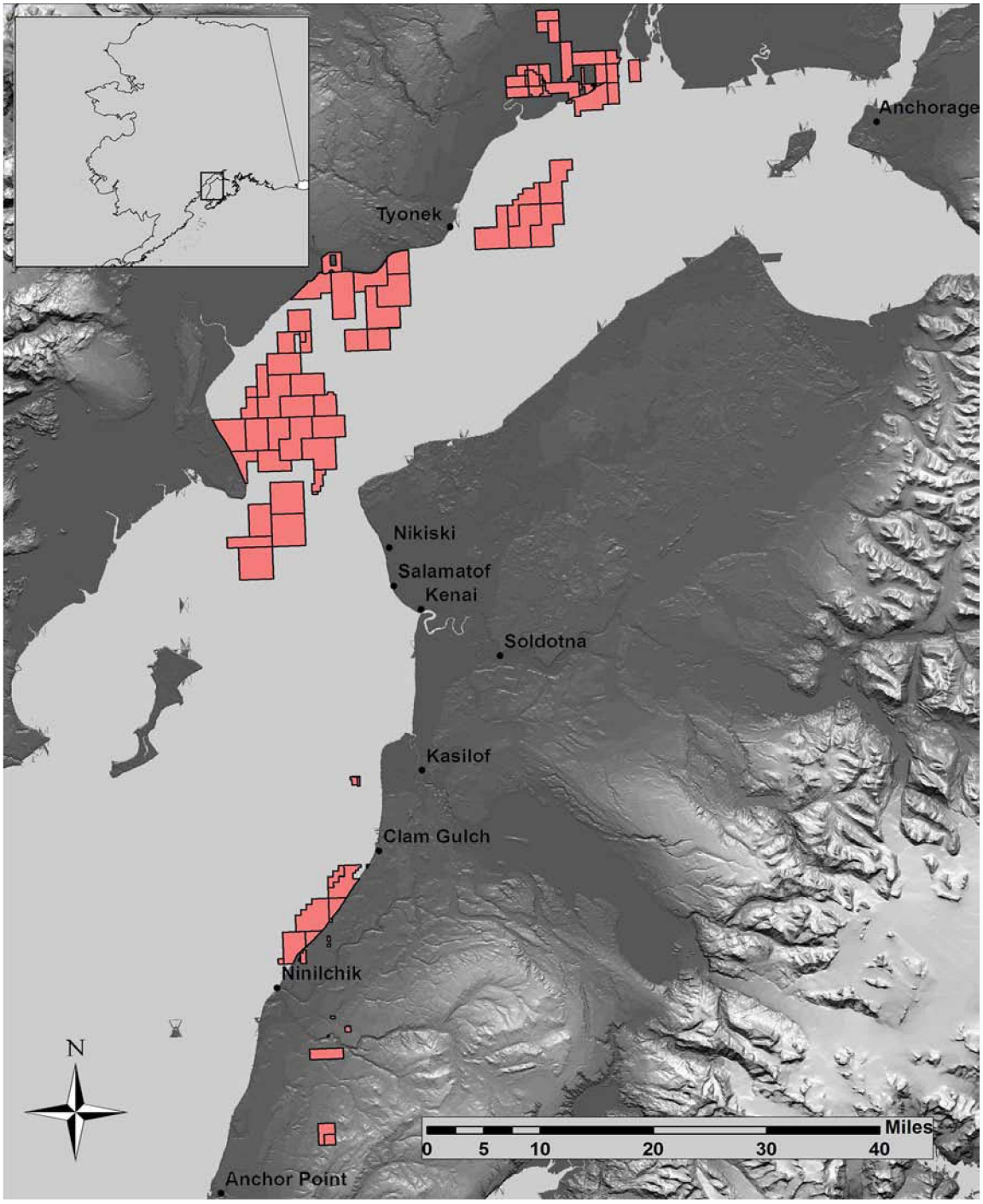
[1] The collateral the state holds, in the form of bonds and other sureties, is covered in Appendix A. At this time, there is no policy standard for the setting of these guarantees.

The protection provided by the chain-of-title theory becomes more precarious as the links of the chain increase in number and weaker links are introduced. This study seeks to determine the number, and to provide an initial assessment of the strength, of each link in the ownership chain for every producing State of Alaska lease in Cook Inlet. It will demonstrate that one practical measure of link weakness is highly correlated with whether the lessee is – or was – a special purpose entity created solely for the acquisition of leases in Cook Inlet. Furthermore, it shows that the rate of weak link formation is increasing as the hydrocarbons in the ground reach the end of their reserves.

Practical limitations affect this study's scope. Because the objective of this project is to assess the state's exposure to DR&R liability, only state leases are considered.[2] As well, the chain of custody is only assessed for actively producing leases. Leases that have not entered production of paying quantities of oil will not be considered as the improvements to the land that DR&R concerns itself with will most likely not be in place. Similarly, leases that have been terminated, and are no longer in production, should have already met their contractual obligation to return the land to a condition satisfactory to the Commissioner of the Alaska Department of Natural Resources (ADNR). The seventy-nine total leases that meet the project criteria are shown in Figure 1. A final limitation is that this study will not measure the DR&R risks associated with pipeline right of ways. Although a crucial component of hydrocarbon development, these have separate statutory and contractual obligations.

[2] The State of Alaska, Federal Government, Native Corporations, and the Mental Health Trust each issue hydrocarbon leases in Cook Inlet. All offshore leasing at this time is on state territorial waters.

Figure 1: Seventy-nine Producing Leases on State Lands Meeting Study Parameters



Credit: (Pike, 2015)

Background and Overview

This section provides an overview of the means by which lease ownership is obtained and transferred, the improvements to the land made in Cook Inlet, and the regulations concerning DR&R.

Leasing

Oil and gas leases are awarded through a competitive bidding process. The process begins when the State of Alaska releases a best interest finding that tracts of land will be available for leasing. The notice provides a date and location where interested parties may submit their bid amount for an available parcel of land. There are minimal qualifications necessary to participate in lease bidding and ownership. Established in 1959, one need only to be a U.S. citizen 18 years of age or older, or a corporation qualified to do business in the state.[3] The age and citizenry requirements may also be satisfied with other caveats, such as intent to become a U.S. citizen.

On the day of awarding, all bids are read in a public location, with the highest bidder for each lease receiving the rights to move forward with lease contracts. Exploration in Cook Inlet began prior to the competitive bidding system becoming mandated. In a non-competitive environment, leases are awarded on a first come first serve basis. This made it possible for individuals to be the original lessee on some of Cook Inlet's older leases.

Lease boundaries are typically drawn before the nature of the reserves beneath it can be fully understood. For this reason, during development lessees may segment or pool their interests in order to efficiently produce a hydrocarbon reservoir. The resource and contractual terminology that guide this land management are summarized in Table 1.

A lease grants to the lessee two types of ownership that may be subdivided or shared; Working Interest Owners (WIO) and Overriding Royalty Interests (ORRI). A WIO is responsible for the costs of drilling and work necessary for production, receives a share of production, and must also pay for DR&R. An ORRI holder receives the benefits from production without any of the capital investment or liability ORRI's are commonly created as a means of raising capital: the WIO sells a portion its future production in exchange for a lump sum today. ORRI's can also be created when the original WIO sells their lease rights and obligations to another party, usually for a lump sum plus the ORRI percentage of future

[3] AS 38.05.190

production, to be delivered free and clear of expenses.[4] For this study, only WIO lease interests will be discussed as ORRIs are not contractually obligated to perform DR&R.

Table 1: Hydrocarbon Contractual Terminology

Term	Definition
Field	A general area which is underlain or appears to be underlain by at least one pool, and includes the underground reservoir containing oil or gas. The words 'pool' and 'field' mean the same thing when only one underground reservoir is involved, but 'field' unlike 'pool' may relate to two or more pools.[5]
Pool	An underground reservoir containing, or appearing to contain, a common accumulation of oil or gas. Each zone of a general structure which is completely separated from any other zone in the structure is covered by the term 'pool'.[6]
Segment	A subdivision of a lease that grants ownership to different segments of acreage. Segmentation can be done vertically or horizontally, but is most often associated with vertical delineations. Vertical stratus may allow owners to produce different pools of resources. At the request of the lessee and with the approval of the division, segments can be reassigned their own lease number with the same effective date of the original lease.[7]
Unit	Unitization is the grouping or pooling of working interest and royalty ownership in oil and gas leases that overlay a common petroleum reservoir. It is a method for developing oil or gas pools that shares costs, maximizes ultimate recovery, prevents economic and physical waste, and protects the rights of all parties with an ownership interest in the accumulation.[8]
Participating Area	Land reasonably known to be underlain by hydrocarbons and known or reasonably estimated through use of geological, geophysical, or engineering data to be capable of producing or contributing to production of hydrocarbons in paying quantities that shall be committed to a Unit[9]

[4] This was the case with the individuals that procured leases early in Cook Inlet's history. They did not have the capital to develop the land themselves, but acquired the parcels anticipating that a corporation with an adjoining leasehold would determine that the individual's lease sits over a hydrocarbon pool.
[5] AS 31.15.050 (2)
[6] AS 31.05.170 (11)
[7] AS 38.05.920 (a)
[8] 11 AAC 88.185 (27)
[9] 11 AAC 83.351 (a)

Transfers

Lease language and state regulations allow a lease, "with the approval of the state, be assigned, subleased, or otherwise transferred to any person or persons qualified[10] to hold a lease". [11] Throughout the majority of Cook Inlet's history, the Assignment Approval documents issued by the Commissioner's office succinctly articulate that the transfer will not adversely affect the state's interests and that the assignment is approved. The process and content of assignment approvals has evolved as concern over the risk associated with these transfers has increased. More recently, Assignment Approvals became several page documents enumerating conditions for these transfers. These conditions can be the financial protections discussed in Appendix A or qualifications such as monthly meetings with the Alaska Division of Oil and Gas (ADOG), and reports outlining capital expenditures planned for development.

Although it has the authority to approve or disapprove transfers, the state has no specific authority entitling it to review the Purchase and Sale Agreements (PSA) negotiated between companies for properties. PSAs are private commercial contracts. Accordingly, while the state may request to see these, or other assurances that the state's interest is protected in the deal, companies are under no legal obligation to provide even un-redacted versions of them. Some documents pertaining to these PSAs and Assignment Approvals are available in public case files, but many remain confidential.

Lease transfer language serves as the basis for the state's chain-of-title theory, and the associated non-bonded coverage it provides. As Section 31 of the DL-1 lease, and Section 18 of the state's so-called "New Form" lease explain,

> The lessee shall remain liable for all obligations under this lease accruing prior to the approval by the state of any assignment, sublease, or other transfer of an interest in this lease. All provisions of this lease will extend to and be binding upon the heirs, administrators, successors, and assigns of the state and the lessee (ADNR, 2009) (ADNR, 1961).

A natural reading of this language that protects the state would have DR&R liability accruing the moment that improvements are made to the land. Therefore, any lessee from that point forward "shall remain liable". Furthermore, as this liability is "binding upon all heirs" of the lessee, any company that subsequently purchases or takes over a lessee can also be subject to this liability.

[10] AS 38.05.190
[11] 11 AAC 82.605 (a)

Lease transfer language and PSAs discuss DR&R obligations in potentially conflicting ways. Documents in the public record indicate that this liability is something that companies negotiate over as terms in the transfer. As an example, in a June 2012 letter to the Commissioner, Hilcorp Alaska LLC and ExxonMobil Alaska Production explain;

> Per the terms of the PSA, Hilcorp has agreed to assume the dismantle, removal, and restoration ("DR&R") obligations to the Department under the leases with respect to the interests being assigned by ExxonMobil in the South Granite Point Unit (Rebrook, 2012).

This language suggests that ExxonMobil believes it assigned its share of the DR&R liability to Hilcorp. Whether DR&R liability can be transferred, or when it is accrued, are questions beyond the scope of this project; at day's end they are more likely than not to be answered in Court. Instead, the focus here is on understanding the strength of the second layer of non-bonded coverage, assuming that the state generally prevails in its chain-of-title theory that that all parties are subject to DR&R liability.

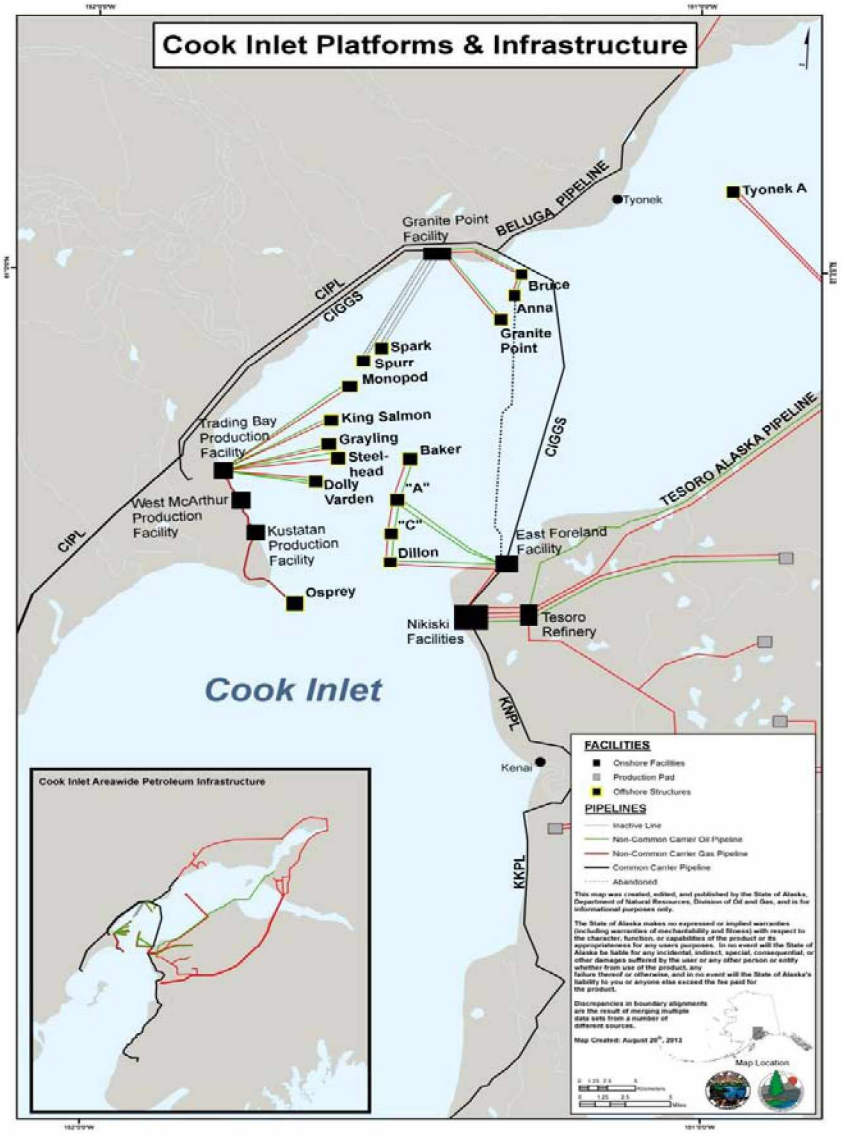
Infrastructure

One of the rights granted with lease ownership is the right to make improvements to the land to facilitate hydrocarbon production. These improvements in Cook Inlet include sixteen offshore platforms, five onshore oil and gas processing facilities, the Drift River Marine terminal, pads, wells, and hundreds of miles of oil and gas pipelines and flow lines. A general overview of this infrastructure is depicted in Figure 2.

Fourteen of the sixteen offshore platforms were installed between 1964 and 1968. The other two, Steelhead and Osprey, were put in place in 1986 and 2000 respectively. Of those original fourteen, four are in "lighthouse mode", meaning they are inactive with all wells shut in. Spark and Spurr were put in lighthouse mode in 1992 when production fell off to a level deemed uneconomic to continue operations (Donohue, 1996). Although Spurr has remained shut-in since 1992, Spark temporarily resumed gas production in the late 1990's and early 2000's, with all operations again ceasing in 2007 (AOGCC, 2015). Baker entered "lighthouse mode" in 2003, but was brought back online for periodic gas production from 2007 through 2014. In October 2014, a fire broke out on the Baker platform with gas production indefinitely shut-down from its one producing gas well (Hollander, 2014). Dillon was also shut-in in 2003, and as the only platform in the South Middle Ground Shoal Unit has remained in "lighthouse mode" since that time.

The leases for these platforms are still considered active even though there is no production at this time. Lease extension language provides circumstances other than production that allow a lease to remain active, including commitment to a Unit Agreement or efforts at reworking or drilling operations (ADOG, 2009). These platforms are deemed to have met one of the conditions for activity; therefore, the obligations under termination to perform DR&R have not been triggered.[12]

Figure 2: Cook Inlet Platforms and Infrastructure



Credit: (ADOG, 2013)

[12] Independent assessment of future DR&R costs is beyond the scope of the project. However, Appendix B references prior studies that are in the public domain that provide indication of the scope of State exposure.

DR&R Obligations

The ADNR and the Alaska Oil and Gas Conservation Commission (AOGCC) are responsible ensuring performance of DR&R. The AOGCC administers all well permits in the state, regardless of land ownership. Their objective is to ensure the ultimate recovery of resources through conservation and protection practices (AOGCC, 2014). In line with this mandate, AOGCC's DR&R requirements are confined to the proper plugging and abandonment (P&A) of wells. AOGCC standards for how wells are to be P&A are enumerated in 20 AAC 25.102-172.

ADNR administers the state's oil and gas leasing program and overseas the monitoring of essentially all hydrocarbon exploration and development activity (Rothe, 2005). ADNR does not have explicit performance standards for DR&R. Instead, by statute that is incorporated into the lease contract, ADNR has broad and discretionary power over both timing and level of DR&R performance (see AS 38.05.090).

> a) Unless otherwise agreed to in writing by the commissioner, a lessee shall remove from a former leasehold (1) all personal property, including above-ground tanks, transportable buildings, equipment, machinery, tools, and other goods, not belonging to the state, within 30 days after termination of the lease; and (2) all buildings and fixtures, including gravel pads, and below-ground tanks, foundations, and slabs, not belonging to the state, within 60 days after termination of the lease. (b) Unless otherwise agreed to in writing by the commissioner, the lessee shall restore the leasehold to a good and marketable condition, acceptable to the commissioner, within 120 days after termination of the lease.[13]

While the default assumption is that extensive DR&R will be performed in an expeditious manner, language gives the Commissioner broad authority for variance. Any structures that remain on the land at the behest of the Commissioner become the property of the State of Alaska. If the lessee does not restore the land to the satisfaction of the Commissioner, then the state may complete this work and charge the lessee for the cost. Lease language contains similar directives, but different timelines for the performance of DR&R;

> The lessee will be directed in writing by the state and will have the right at any time within a period of one year after the termination, or any extension of that period as may be granted by the state, to remove from

[13] AS 38.05.090

> the leased area or portion of the leased area all machinery, equipment, tools, and materials (ADOG, 2009).

Moreover, the lease elaborates on the state taking control of property it elects to keep from the lease.

> At the option of the state, all improvements such as roads, pads, and wells must either be abandoned and the sites rehabilitated by the lessee to the satisfaction of the state, or be left intact and the lessee absolved of all further responsibility as to their maintenance, repair, and eventual abandonment and rehabilitation (ADOG, 2009).

The state wears liability for improvements not removed and land not rehabilitated. Accordingly, the capacity of lessees to perform DR&R is of particular state concern. Although the ultimate performance standards of DR&R are important for policy, the remainder of this report will focus on the non-bonded coverage options available to meet the Commissioner's directive, whatever it may be.

Methods

First Layer of Non-bonded Coverage: Existing Lessee Capacity

The financial capacity of lessees to perform their DR&R obligations forms the first layer of non-bonded coverage. To assess the strength of this assurance, coverage analysis begins by creating a complete list of actively producing leases on state lands. The *Cook Inlet Unit Land and Lease Working Interest Ownership* map displays all units within Cook Inlet and indicates their land ownership and production status (ADOG, 2014). Sixteen units are currently meeting study parameters: Deep Creek, Ivan River, Kasilof, Lewis River, Nicolai Creek, Nikolaevsk, Ninilchik, North Cook Inlet, North Trading Bay, Pretty Creek, Redoubt, South Granite Point, South Middle Ground Shoal, Stump Lake, Trading Bay, and West McArthur River. ADL lease numbers for all producing leases in these units were obtained from the ADOG's *Ownership of Units and Producing Leases*. There are seventy-three leases contained in active units. In addition, the same document indicates production from an additional six non-unitized leases in state waters (ADOG, 2015). The seventy-nine leases selected from this were then cross-referenced with ADOG Royalty Division's *CI Lease Production Database Spreadsheet* to assure accuracy (ADOG, 2015).

The ADOG updates the *Oil and Gas Lease Ownership* report monthly (ADOG, 2015). For every lease in the state, it shows the WIO percentage held by a company in all segments. The March 2, 2015 version of this lists nine companies as WIO in the study leases: Hilcorp Alaska LLC, Aurora Gas LLC,

ConocoPhillips Alaska Inc, ConocoPhillips Company, Cook Inlet Energy LLC, Apache Alaska Co, Buccaneer Alaska LLC, ExxonMobil Oil, and XTO Energy Inc.

How capable are these companies to perform DR&R obligations? One common metric for judging a company's financial fitness is the evaluation of a Z-score. The Z-score is a unitary index that combines a number of potential indicators such as working capital, retained earnings, market value of equity, sales, total assets, and total losses. Information to populate the Z-score formula can be found in the audited financial statements publically available with the Securities and Exchange Commission (SEC). However, only publicly traded companies must make SEC filings. Just two of the nine current Cook Inlet lessees are publicly traded. Accordingly, a transparent public assessment of DR&R liability in Cook Inlet liability cannot be made.

Without a direct means of measurement, we rely on proprietary credit evaluative services. Dun & Bradstreet maintains the world's largest database for commercial credit worthiness. The metrics they have developed is the D&B Standard Marketing Prescreen Score, which predicts the likelihood of a firm paying in a severely delinquent manner, 90+ days past terms, over the next 12 months. Using a company's most recent payment history and D&B's proprietary statistical models, they rank if a company is at low, medium, or high risk for default.

Second Layer of Non-bonded Coverage: Chain-of-Title Theory

If a current lessee lacks the financial wherewithal to perform DR&R, the chain-of-title theory could give the state recourse to the financial capacity of previous lease holders. Analysis of the strength of this second layer of state protection took place in two parts. Part One identifies the links that compose this chain, and Part Two continues initial investigation into the strength of these links.

Part One: Understanding the Chain

To facilitate understanding of the links in lease history, this project created the Chain-of-Title spreadsheet, which documents the percentage of WIO of every segment for each study lease from the time of first production. The ownership data necessary to populate this can be found online at the ADNR Land Administration System. This system provides case file summaries of all transfers of WIO and ORRI by segment and percentage. These data were manually scanned and input into the spreadsheet.

Each active unit has its own spreadsheet tab indicating lease ownership; the disparate non-unitized leases are combined into their own tab. Percentage of ownership in each segment of each lease is arranged by rows, while ownership in that portion of the lease is tracked across time in columns, from 1961 through February 2015. Every unique company that has held an ownership interest in a producing Cook Inlet lease is assigned a unique identification number. All told 61 such companies have owned Cook Inlet leases. For any year that a lease segment is in production, the corresponding company code is entered in the designated percentage of working interest ownership. Anytime this unique ownership is transferred, the spreadsheet highlights the cell.

In populating the Chain-of-Title spreadsheet certain structuring decisions were made.

1. Ownership history until just prior to first production is disregarded, on the grounds that no DR&R liability accrues until improvements have been made[14].
2. Only ownership of 30 days are greater are recorded. The assumption is that no material improvements were made during periods in which ownership interest was held for less than 30 days.
    a. Example: Company X transfers to Holding Company Y. 3 days later Holding Company Y transfers to Company Z. The spreadsheet will only show transaction of X to Z.
3. A name change, without a change in ownership structure, does not change the ID number; in essence, we treat name changes as *not* being ownership changes.
4. Companies that result from a merger or acquisition, and are assigned leases, are considered unique owners and given a new lessee ID.
5. WIO percentages reflect each lease's actual fractional ownership history.

The spreadsheet therefore maps the ownership history of every portion of ownership in every Cook Inlet lease likely to have improvements subject to state DR&R obligations. Because each ownership percentage constitutes a unique row, the spreadsheet shows the total number of owners and when each owner occupied (and potentially further improved) the lease. The capacity of the owners across time to perform the DR&R obligations constitutes the state's backstop security.

[14] This may understate the total DR&R liability. Improvements for exploration activities that were not subject to DR&R would be excluded by this assumption. The painstaking process of assessing DR&R obligations that are either not tied to a current producing or active lease, or accrued to improvements that happened years prior to first production followed by lease interest transfer of ownership, is left to future research.

Figure 3 provides an example of the Chain-of-Title spreadsheet layout. The first number on the left indicates that this is lease ADL 17589. Two of the segments, 1 and X are broken down according to the percentage of ownerships that are assigned. Beneath each year and in accordance with the percentage of ownership, the spreadsheet shows the numeric code of the corresponding company, such as "15" for the Pan American Petroleum Company. A company index at the front of the spreadsheet, as well as the formula box when a cell is highlighted, reveal the company name that the code tracks.

Figure 3: Example of How the Chain-of-Title Spreadsheet Tracks Lease Ownership

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Lease													
17589													
Section													
Percentage													
1													
25		15	15	15	15	15	15	16	16	16	16	16	16
25		35	35	35	35	35	35	16	16	16	16	16	16
25		18	18	18	18	18	18	16	16	16	16	16	16
25		16	16	16	16	16	16	16	16	16	16	16	16
X													
3.75								16	16	16	16	16	16
6.25								16	16	16	16	16	16
15								16	16	16	16	16	16
12.5								35	38	38	38	19	19
12.5								35	38	38	38	38	38
25								15	15	15	15	36	36
25								18	18	18	18	18	18

The next step was to learn more about the companies involved. The study asked four questions, which indirectly provide evidence of either financial fitness or likelihood of having directly generated DR&R obligations.

a) When was the company established?
b) How long did they remain in Cook Inlet?
c) What happened to the company after they relinquished their lease ownership?
d) How many "degrees of separation" between the lessee and a company that currently exists that might be called upon to perform DR&R?

Knowing when a company was established provides a measurement of company existence prior to arrival in Cook Inlet. The duration during which a company so existed is an indirect indication of the

company's independent financial wherewithal to perform DR&R. Companies that were formed just prior to acquiring Cook Inlet leases are likely to have little independent capacity.[15]

To determine the date of lessee company formation, the study referenced company websites for their own accounts of their corporate history. If information was not available here, the Petroleum Archives Project of the University of Virginia and other academic compilations were relied upon. When these resources were exhausted, we assume company formation begins with the company's acquisition of a state business license. These dates were taken from the Alaska Department of Commerce, Community, and Economic Development's online database, which contains business license records for all companies that have been active in the state.

Measuring how long a company existed in Cook Inlet can indicate whether they were a major or minor player in the basin. Companies present for multiple years would be most likely to have made improvements to the land or been a beneficiary of the capital improvements of another company, tying them to the infrastructure. This is calculated from the effective date of lease ownership, or transfer from another entity, to when their transfer to another was approved by ADOG.

Understanding what has happened to a company since they assigned away WIO provides a measure of whether that is a link in the chain that can be called upon to make good on obligations. For all companies, they either exist as the same entity on the title, are the same company but have undergone a name change, merged or were acquired by another company, declared bankruptcy, or been dissolved. Between October 2014 and February 2015, the study gathered this information from the lease and unit case files available at the ADOG for public review. Supplemental data was also acquired through a variety business and periodical resources, including *Bloomberg*, *New York Times*, and *Oil and Gas Journal*. For companies that declared bankruptcy, or experienced mergers and acquisitions, the study documented the new parent or purchasing company in order to create a corporate family tree.

From these family trees, it is possible to count "degrees of separation"; defined here as the number of companies one would have to assign obligations through before reaching an entity that could be called upon to make good on contractual agreements. There are two types of separation that exist between corporate entities. One is the separation between a parent company and its wholly owned

[15] The capacity of the lessee's parent, if any, remains an open question.

subsidiary, and the other is the relationship between a company and another that it combines with to form a new company. Subsidiaries are considered independent agents under the law. Accordingly, the burden of proof required to show that a parent shares in a subsidiary's liabilities is high. In principle, one of the reasons a subsidiary is created is to shield the parent from liability. The other means of forming a degree of separation is through company mergers or acquisitions. In this case, the assignment of assets and obligations is more conspicuous through commercial contracts, thereby lowering the burden of proof that obligations are shared. This study does not differentiate between the difficulties in assigning these obligations, but rather quantifies the most direct line between a no longer existing corporation and a possible surety.

As a general rule, the more degrees of separation there are, the weaker the link in the chain becomes. While it may be possible to legally pin a company's contractual obligations to another entity, the amount of resources necessary to pierce this corporate veil becomes greater the more layers there are to go through. The more resources or time required of the state to enforce a contract, the greater the likelihood would be that it would settle for a lesser amount of money.

The Degrees-of-Separation spreadsheet tracks these layers using the same layout created for the Chain-of-Title. The rules to populate it are as follows:

1. If a company exists under the same ownership structure as when it first held a Cook Inlet lease, it is coded as a 1.
2. Name changes that did not result from a change in ownership are also coded as 1.
3. If a company has experienced a merger or acquisition resulting in a new entity that is only one company off from the original lessee, it is given a 2
    a. Example: Conoco Inc and Phillips Petroleum have now merged to become ConocoPhillips Corp. Any lease segment previously owned by either of these companies is given a 2.
4. Codes of 3 or 4 are given if a company is 2 or 3 degrees away from original ownership.
    a. Example: Halbouty Alaska Oil no longer exists. In 1986 Texaco Inc took over Halbouty Alaska Oil and created Texaco Alaska Inc. In July 1990, Texaco Alaska Inc was merged into Texaco Producing Inc. In 2001, Texaco Inc and its subsidiaries were merged with the Chevron Corp. Therefore, any lease of Halbouty Alaska Oil has 3 degrees of separation and is coded a 4.

5. Code of 5 is a stop gate. This means the company has been dissolved or bankrupt and that no one acquired the rights and obligations of its contracts.
6. A highlighted border on a cell indicates a lease transfer took place

Using the same lease example as Figure 3, Figure 4 shows the layout for the Degrees-of-Separation Spreadsheet.

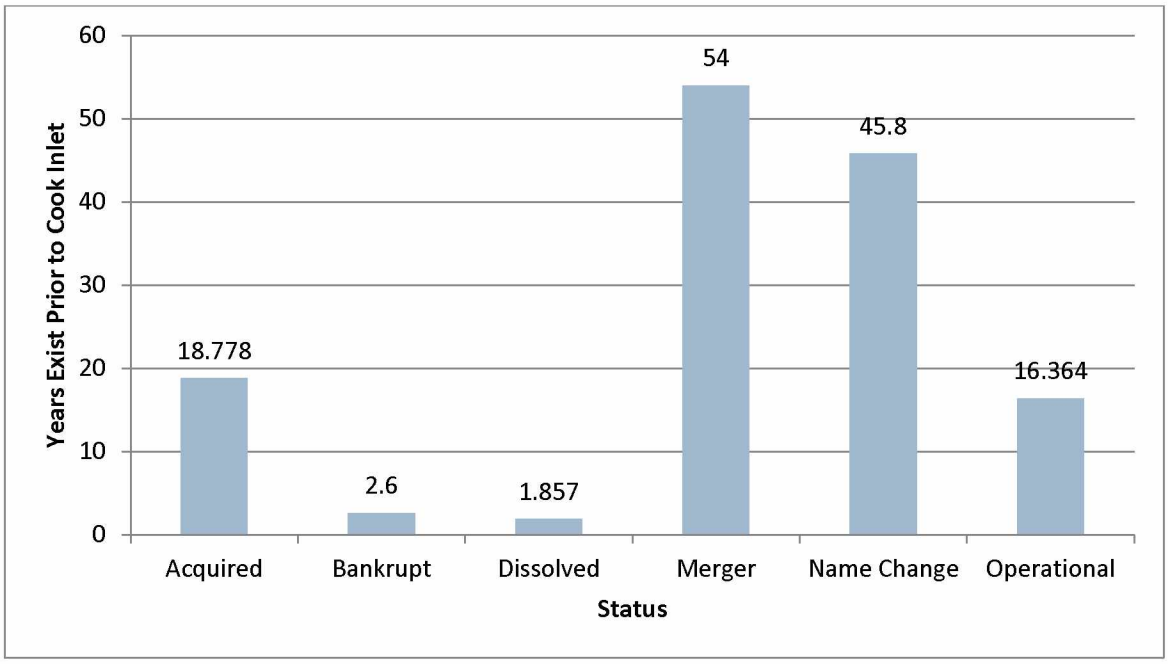
Figure 4: Example of How the Degrees-of-Separation Spreadsheet Tracks the Number of Links between Previous Lessees and a Surviving Entity That May Perform Obligations

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Lease													
17589													
Section													
Percentage													
1													
25		3	3	3	3	3	3	2	2	2	2	2	2
25		1	1	1	1	1	1	2	2	2	2	2	2
25		4	4	4	4	4	4	2	2	2	2	2	2
25		2	2	2	2	2	2	2	2	2	2	2	2
X													
3.75								2	2	2	2	2	2
6.25								2	2	2	2	2	2
15								2	2	2	2	2	2
12.5								1	2	2	2	2	2
12.5								1	2	2	2	2	2
25								3	3	3	3	2	2
25								4	4	4	4	4	4

Part Two: Special Purpose Entities

Initial analysis of the companies in the chain presented an interesting trend. The six companies that went bankrupt, and seven that were dissolved, ultimately broken links in the ownership chain of title, existed on average for only 2.6 and 1.86 years respectively, prior to obtaining a working interest ownership. This is a far shorter duration than companies at other operational statuses (Figure5). These companies, apparently created solely for the acquisition of Cook Inlet leases, are referred to here as Special Purpose Entities (SPE). SPE may be either a newly formed independent company or a wholly owned subsidiary of a larger corporation, such as ARCO Alaska Inc.

Figure 5: Present Day Operational Status and the Average Number of Years Those Companies Existed Prior to WIO in Cook Inlet Lease



The Special Purpose Entity Spreadsheet reveals the accumulation of companies that existed for less than three years prior to entrance in Cook Inlet by using the same format as the Chain-of-Title and Degrees-of-Separation. The coding for it is as follows:

1. If a company existed less than 3 years prior to WIO, it is coded 1
2. Code of 2 is used for all other companies
3. A highlighted border on a cell indicates when a lease transfer took place

The three different indirect measures of lessee financial capacity to perform DR&R obligations raise an obvious question: are they correlated? That is, does being a special purpose entity correlate with the likelihood of the lessee's successor going bankrupt or being dissolved? Similarly, does being a special purpose entity correlate with the degrees of separation between the lessee and its ultimate successor or assigns? If so, then there might be good policy grounds for requiring different levels of bonded coverage for special purpose entities.

To investigate whether a correlation exists between special purpose entities and degrees of separation, the study performed an Analysis of Variance (ANOVA). ANOVA is a statistical method used to

compare the means between two or more groups. If a company's status as a SPE serves as an indicator of higher degrees of separation, then the mean degrees of separation for SPE will be higher than the means for all other companies. Observation points to test this are extracted from the spreadsheets at any time that a lease link is created and whenever a link is transferred.[16]. At the observation point, data pairs are created using the status as a SPE (1 or 2) as the X and degrees of separation as the Y. For example, Halbouty Alaska Oil has an ordered pair of (1, 4) because it is a SPE (1) and there are three degrees of separation between it and the Chevron Corporation, a company that may be able to meets its contractual obligations (4).[17]

Results

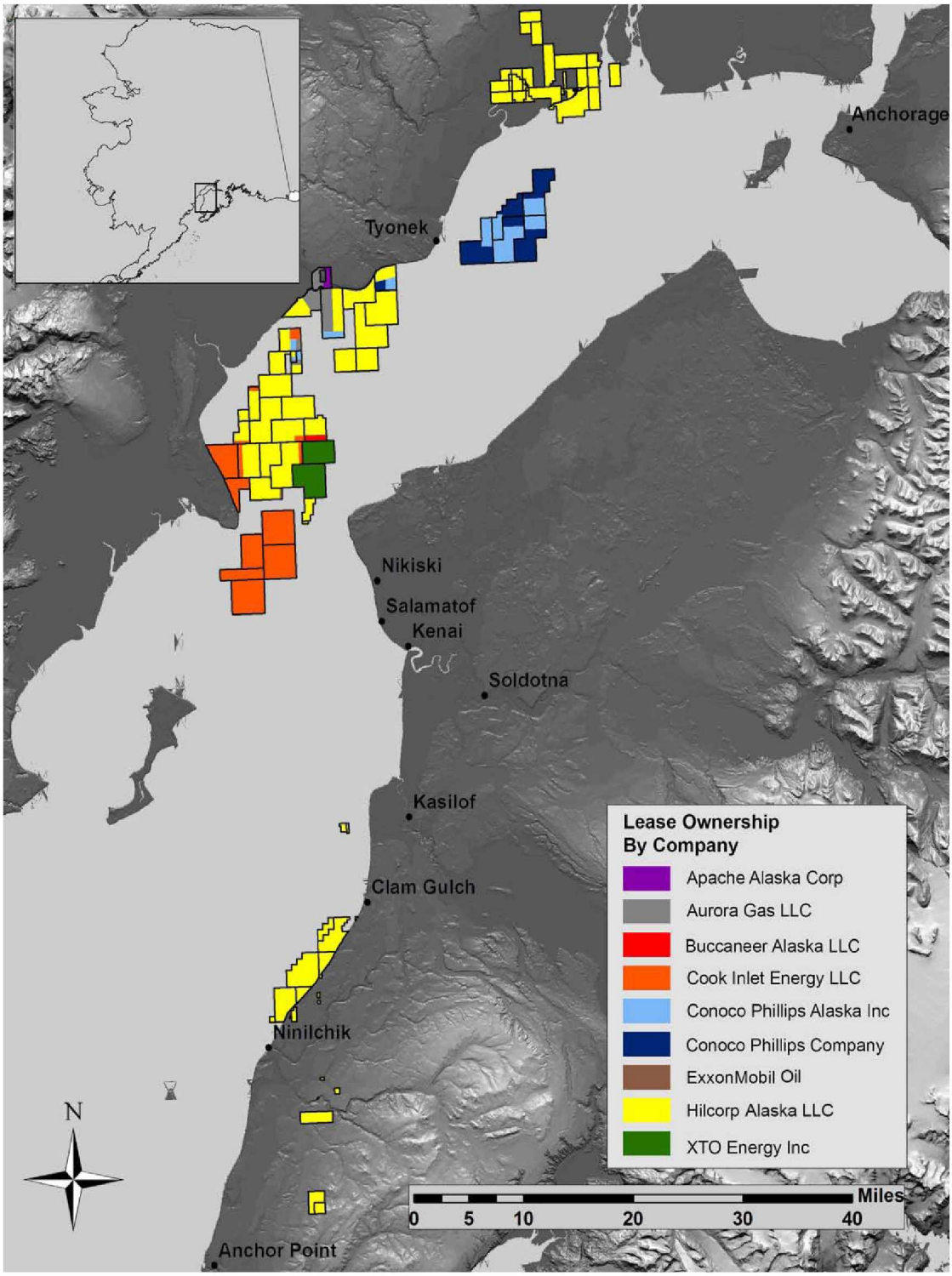
First Layer of Non-bonded Coverage: Existing Lessee Capacity

There are nine companies that hold a WIO in study leases as of March 2, 2015. These companies and the shares of ownerships they have in all study leases are depicted in Figure 6. Lease segmentation and joint ownership are indicated by multiple color shadings within one lease outline.

[16] The final transfer is not counted as it will be to the present lease holder. Present lease holders are covered under the first layer of non-bonded coverage and not part of the chain's history.

[17] The study also conducted analysis on longevity lengths other than 3 years to see if further delineations in age were significant. The results showed no statistical relationship between degrees-of-separation and other arbitrarily created categories of longevity.

Figure 4: State Lands Lease Holdings in Cook Inlet by Company



Credit: (Pike, 2015)

D&B's Prescreen Marketing Score provides ratings for all but two of the Cook Inlet Companies. Apache Alaska Corp is not in their database; however, their parent Apache Corp does have a rating, which is used in its place. Buccaneer Alaska LLC is also not given a credit score, presumably because they have already entered bankruptcy proceedings. They are given a high risk score by default. The results of the D&B score are coded according to WIO lease percentage on the map in Figure 8 and summarized by company in Table 3. Figure 7 breaks down credit risk by offshore platforms. The percentages shown correspond to the percentage of the platforms held by different companies in the low, medium, and high risk ratings.

Figure 5: D&B Credit Risk for Platform Operators in Cook Inlet

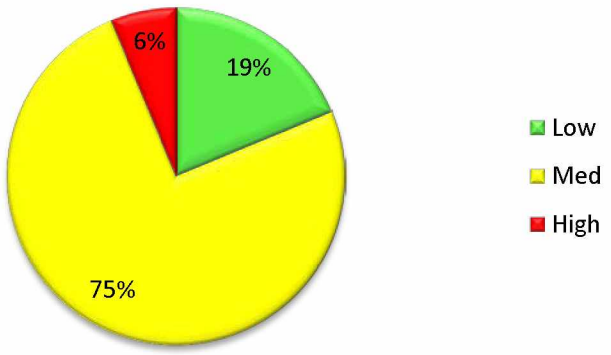
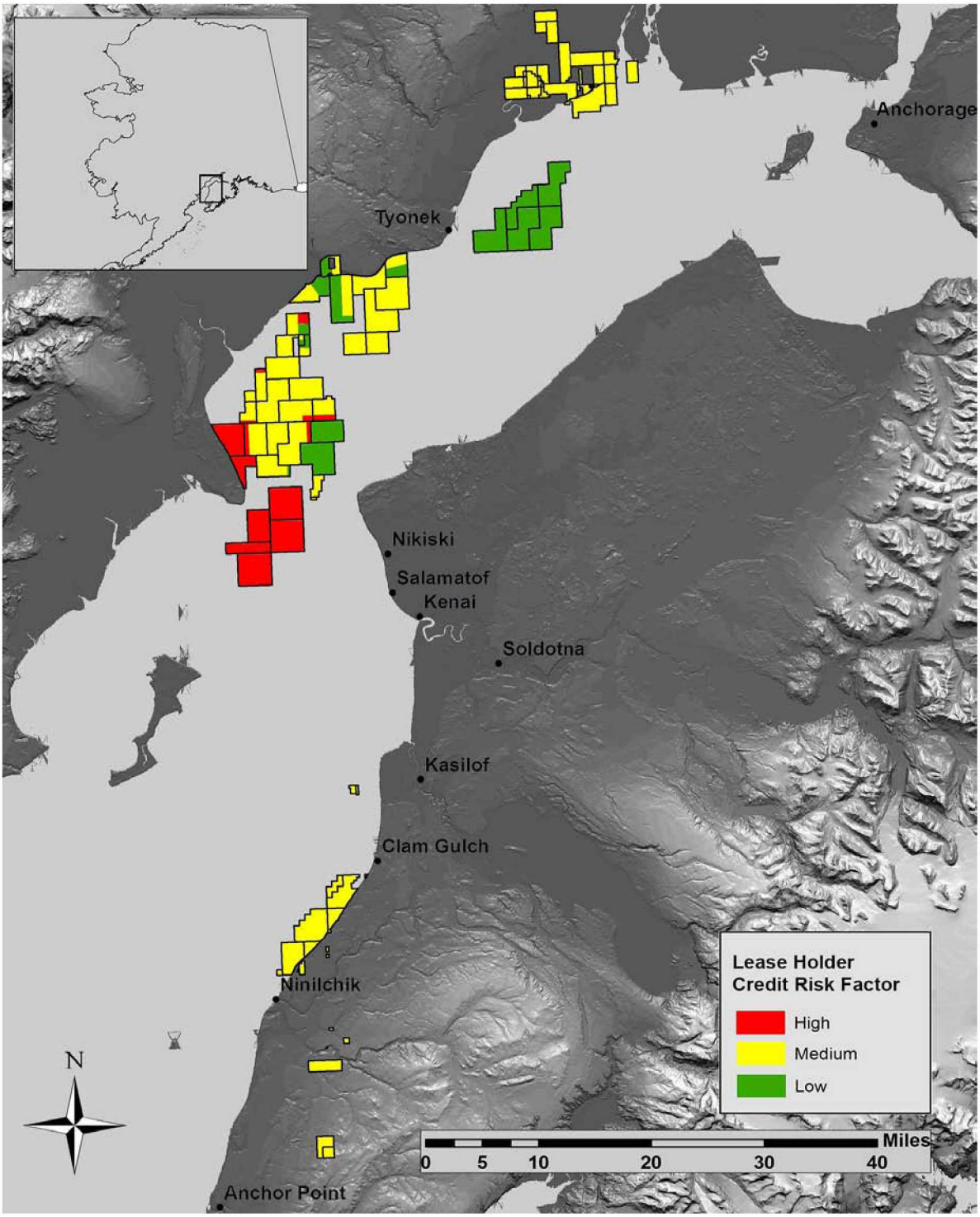


Table 2: D&B Credit Risk of Companies with WIO in Cook Inlet Leases

Company	Risk
Apache Alaska Co	Medium
Aurora Gas LLC	Low
Buccaneer Alaska LLC	High
ConocoPhillips Alaska Inc	Low
ConocoPhillips Company	Low
Cook Inlet Energy LLC	High
ExxonMobil Oil	Low
Hilcorp Alaska LLC	Medium
XTO Energy Inc	Low

Figure 6: D&B Credit Risk of Companies According to Acreage Held in Cook Inlet



Credit: (Pike, 2015)

Second Layer of Non-bonded Coverage: Chain-of-Title Theory

Part One: Understanding the Chain

The results of the Chain-of-Title and Degrees-of-Separation spreadsheets are located in Supplemental Docs 1 and 2.

Part Two: Special Purpose Entities

The results of the Special Purpose Entity spreadsheet is located in Supplemental Doc 3.

The ANOVA examined two groups of companies: Group 1 SPE and Group 2 all other companies. There are a total of fifty-four companies with observation points, twenty-five in Group 1 and twenty-nine in Group 2. The names of these companies and the respective shares of observation points from them are shown in Figures 9 and 10.

Although the sample size used to generate these data sets is of comparable size, each contained a company that accounted for nearly one third of the data. This bulk of observations points does not necessarily represent that these companies held a large share of Cook Inlet acreage, but rather that because the spreadsheets are set up to count churn of lease percentages they were involved at a time of high turnover for several smaller shares. These companies are ARCO Alaska Inc for Group 1 and Union Oil Co for Group 2.

Figure 7: Company Percentage of Observation Points Group 1 - SPE

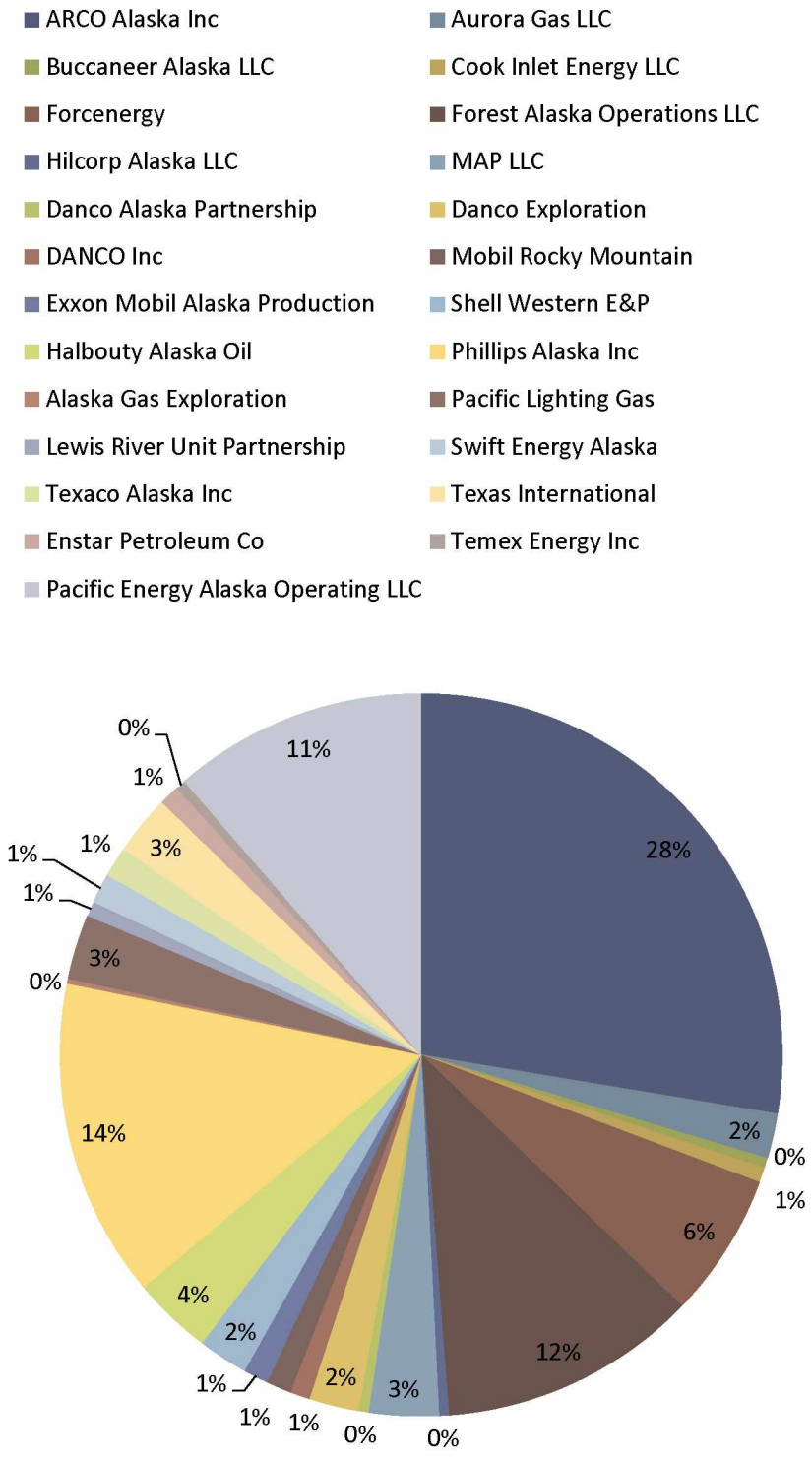
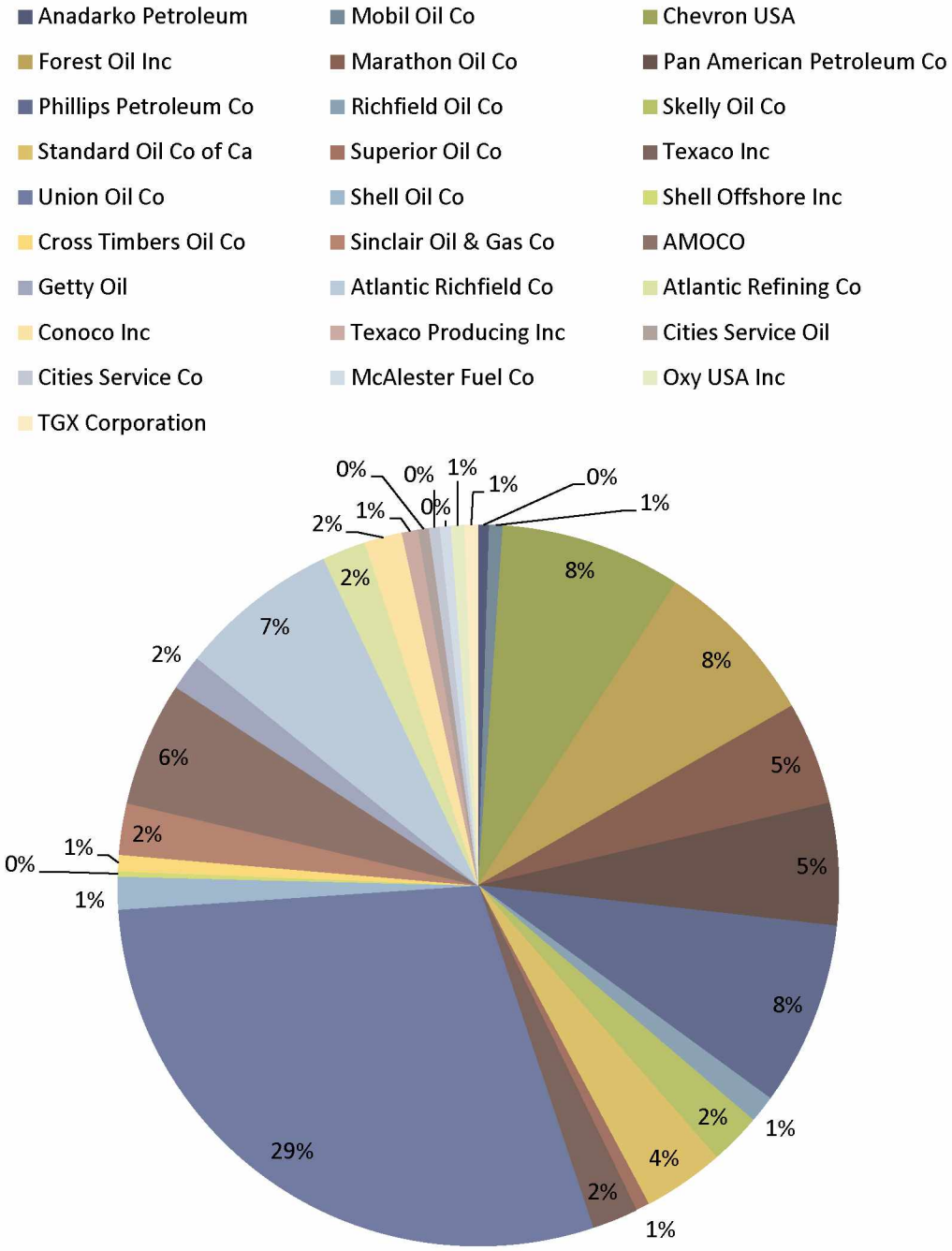


Figure 8: Company Percentage of Observation Points Group 2 - All Others

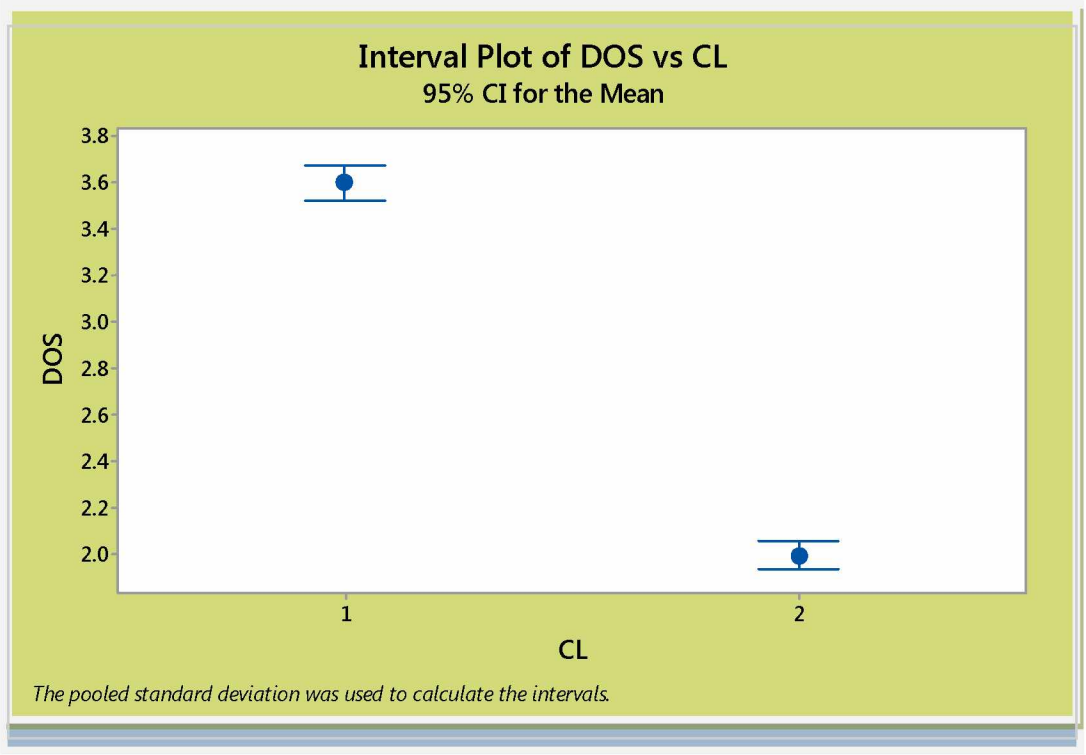


Based on the observation points in this analysis, the study can say with 95% confidence that SPE on average have degrees of separation between 3.5221 and 3.6779. Comparatively, all other companies will range between 1.9403 and 2.0572. The tightness of these intervals is further summarized and shown in Table 4 and Figure 11.

Table 3: ANOVA for Degrees of Separation of Company Groups at 95% Confidence Interval

CL	N	Mean	StDev	95%CI
1	460	3.6000	1.1264	(3.5221 3.6779)
2	816	1.9988	0.6468	(1.9403 2.0572)

Figure 9: Interval Plot for Degrees of Separation of Company Groups at 95% Confidence Interval

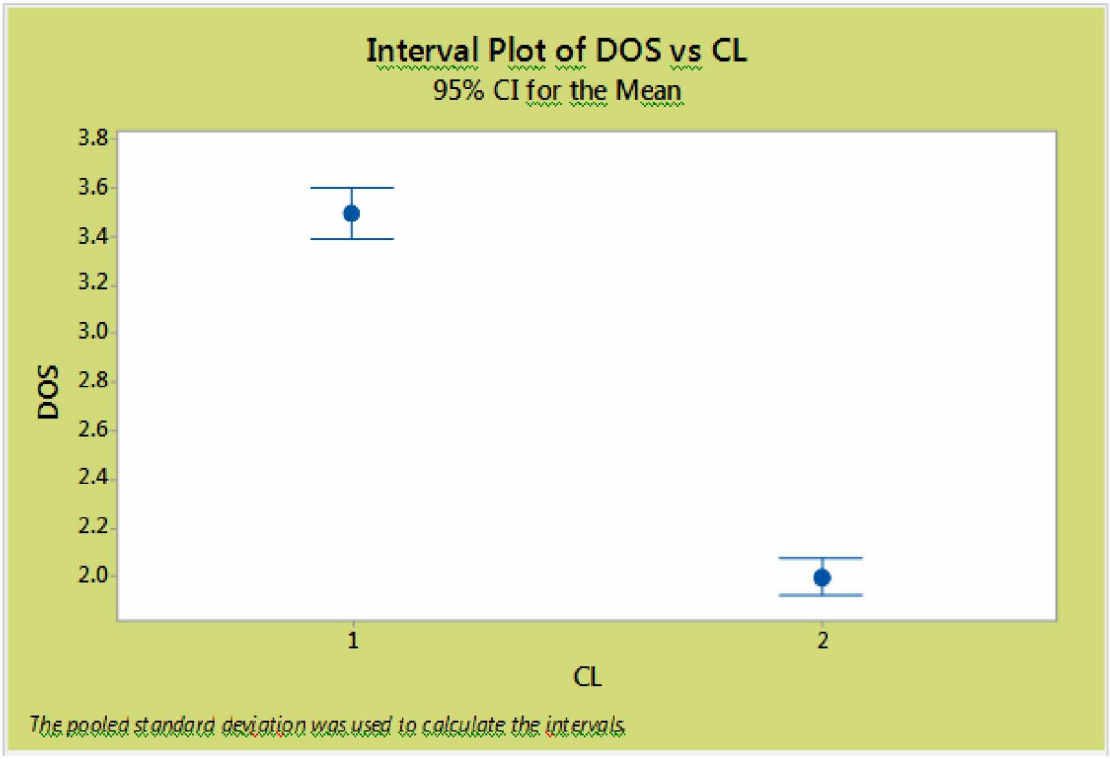


Given that ARCO Alaska Inc and Union Oil Co contributed significant shares of observation points, the study performed the ANOVA again omitting the points from these two companies in order to determine whether they may be skewing the data. The results of this analysis presented similar trends. At 95% confidence, Group 1's interval range for degrees of separation is between 3.3925 and 3.6015, an increase in variance of 0.0532. For Group 2, the 95% confidence interval is between 1.9184 and 2.0781, an increase in variance of 0.0425. The ANOVA table and interval plots for this are shown in Table 5 and Figure 12.

Table 4: Adjusted ANOVA for Degrees of Separation for Company Groups at 95% Confidence Interval

CL	N	Mean	StDev	95% CI
1	336	3.4970	1.2531	(3.3925 3.6015)
2	576	1.9983	0.7701	(1.9184 2.0781)

Figure 10: Adjusted Interval Plot for Degrees of Separation for Company Groups at 95% Confidence Interval



Omitting ARCO Alaska Inc and Union Oil Co makes little difference to the results.

Discussion

First Layer of Non-bonded Coverage: Existing Lessee Capacity

The results demonstrate that there are potential weaknesses with the capacity of current Cook Inlet lessees. Only 17% of the acreage and 3 of the platforms are held by low risk companies. Medium risk companies hold 76% of the acreage and 12 of the platforms, with the remaining platform and 7% of the acreage held by a high risk company. Although D&B is a reputable vendor of corporate information, the analysis would benefit by being able to more precisely quantify this risk level. However, as previously discussed, most of the companies in Cook Inlet are privately held. Accordingly, the public record does not provide enough information to develop a more accurate metric.

The risk of default for these companies is at best an indirect indicator of whether they would meet contractual obligations to perform DR&R. In general, SPEs not backed by parent guarantees or bonding pose substantial risks of non-performance, as their only assets are the Cook Inlet reserves that they hold. The value of reserves left in the ground, if worth substantially more than the cost of DR&R performance, provides some state security as they might be able to attract a new acreage entrant given an SPE exit. In times of plentiful reserves or high prices for the commodities, this risk is lowered. If, however, a basin is reaching the end of productive life and the value for its hydrocarbons drops, this risk level is then heightened.

Determining the value of the oil and gas remaining in Cook Inlet is a complicated and necessarily contingent undertaking. Volatile commodity prices, operation and maintenance costs, State-offered exploration and development tax credits, royalty terms, and the economies of scale for production all have impacts. As a "snapshot" point of reference, estimates of the oil reserves along with their present and future projected prices may inform whether these risk estimates could be more or less than the D&B credit worthiness score.

Figure 11 shows high and low estimates of the proportion of cumulative Cook Inlet production to total reserves since commercial production commenced in 1958. While cumulative production is known, total reserves are not. The future production projections from the *2009 Alaska Oil and Gas*

Report 2009 generate the "high" cumulative production proportions (ADOG, 2009).[18] The "low" cumulative production proportions are generated using the U.S. Geologic Survey's (USGS) 2011 *Assessment of Undiscovered Oil and Gas Reserves of the Cook Inlet Region* (USGS , 2011). The USGS numbers are "probabilistic estimates of undiscovered, technically recoverable resources. As such they probably represent an over-estimate of the upper bound of future production, as they include oil and gas reserves in small, non-economic accumulations" (ADOG, 2014).

Figure 11: High and Low Estimates of Cook Inlet Produced Oil Reserves

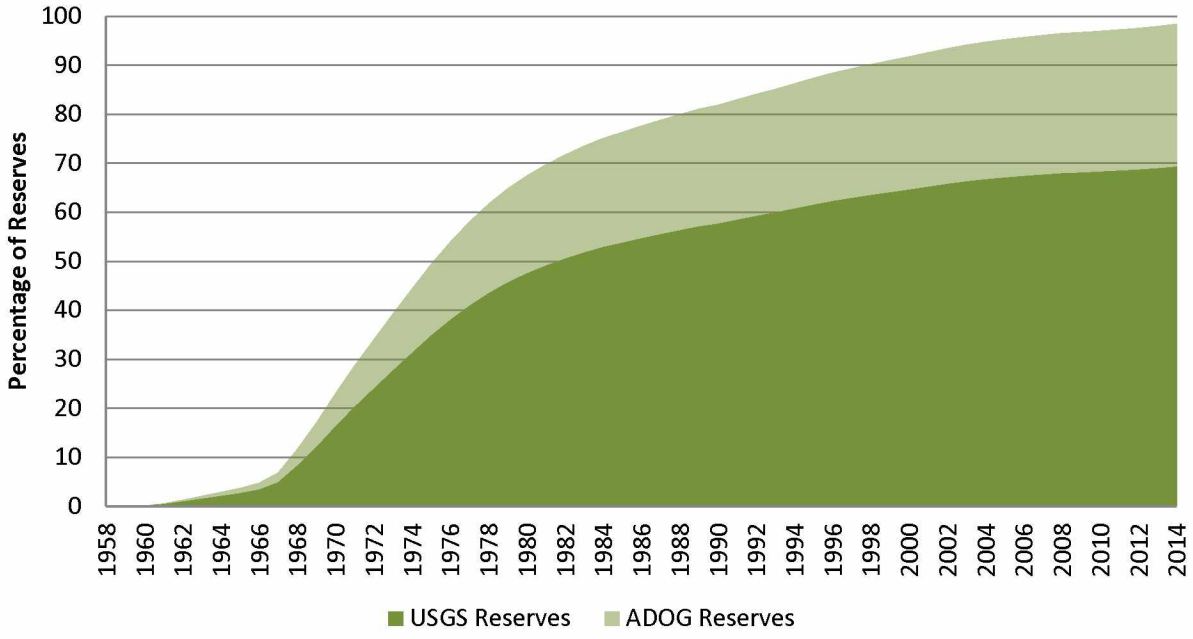
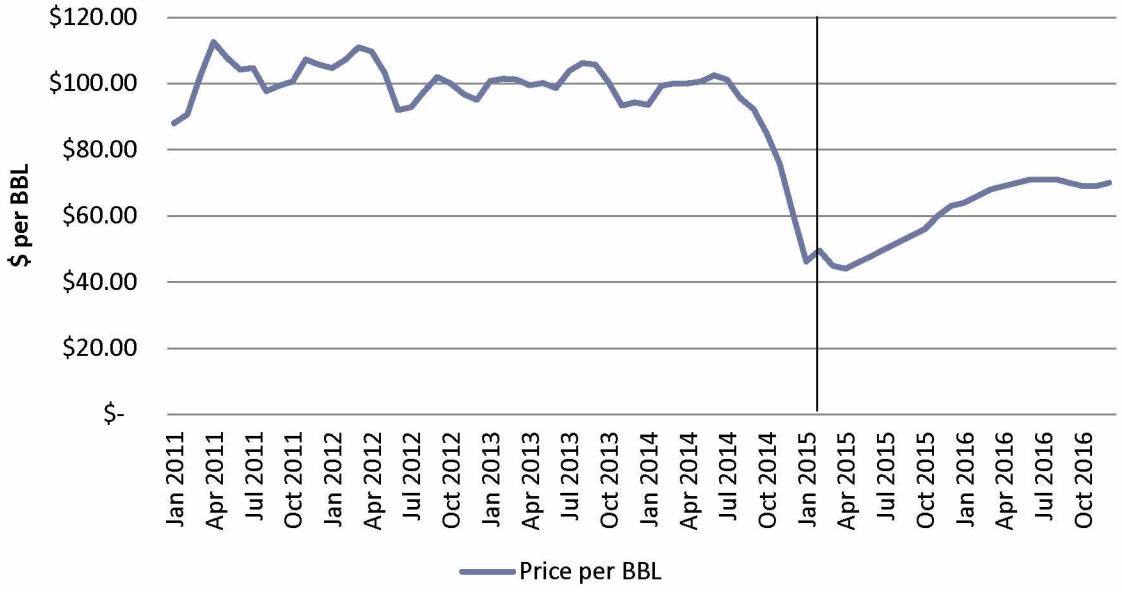


Figure 14 shows the recent and projected domestic price per barrel of crude oil according to the U.S. Energy Information Administration (U.S. EIA, 2015)

[18] The annual reports past 2009 no longer include this information. When requests were made to the ADOG to obtain more recent figures, it was said that since 2010 this information is now considered to be taxpayer confidential.

Figure 12: Current & Projected Domestic Cost of Crude Oil per Barrel



The above graphs suggest that the amount of proven reserves and the recently falling prices of oil may compound the risk levels associated with current lessees; thus weakening the protection the state has from this form of non-bonded coverage.

Second Layer of Non-bonded Coverage: Chain-of-Title Theory

The ANOVA results suggest that SPE are more likely to have higher degrees of separation, thereby making them weaker links in the chain-of-title history. Furthermore, as previously discussed, there is a general trend in hydrocarbon production that over the course of field life ownership transfers from large corporations to smaller companies. It therefore becomes important to understand if the weak links in the Cook Inlet basin are indeed increasing over time.

In order to calculate this, cumulative production of oil and gas are plotted against the cumulative number of links in Cook Inlet controlled by a SPE. All else equal, the rate of change in the cumulative number of SPE links in Cook Inlet indicates periods during which state DR&R risks ratchet upward (Figure 15).

Figure 13: Proportion of Cook Inlet Oil Reserves Produced and SPE Chain Links

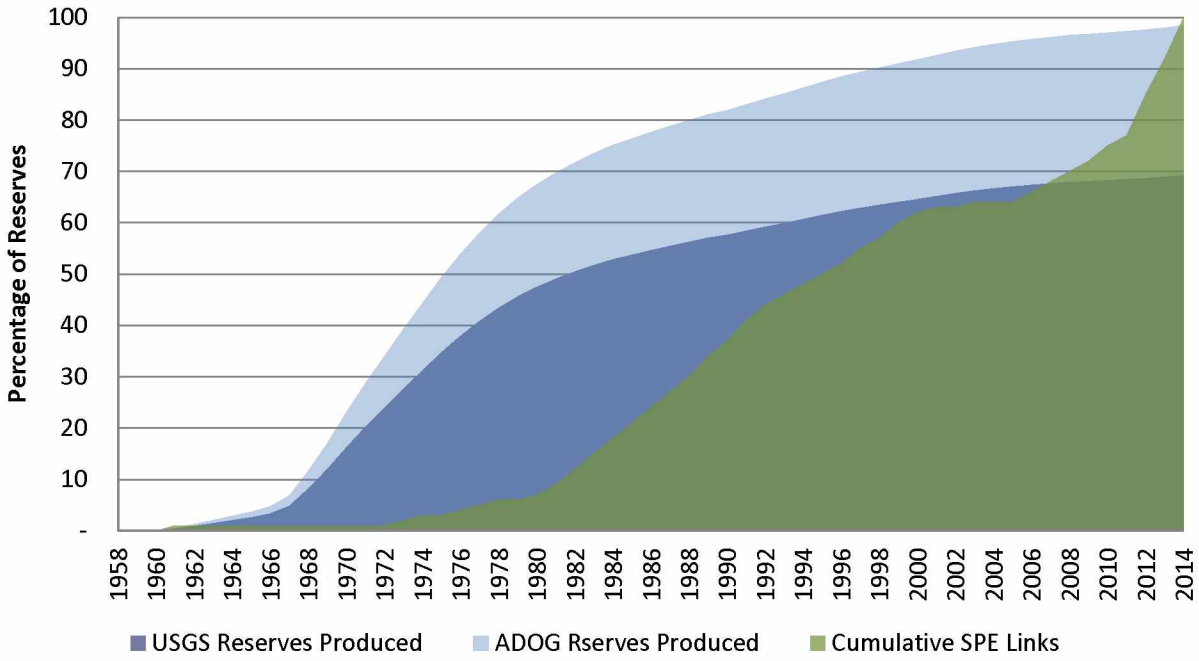
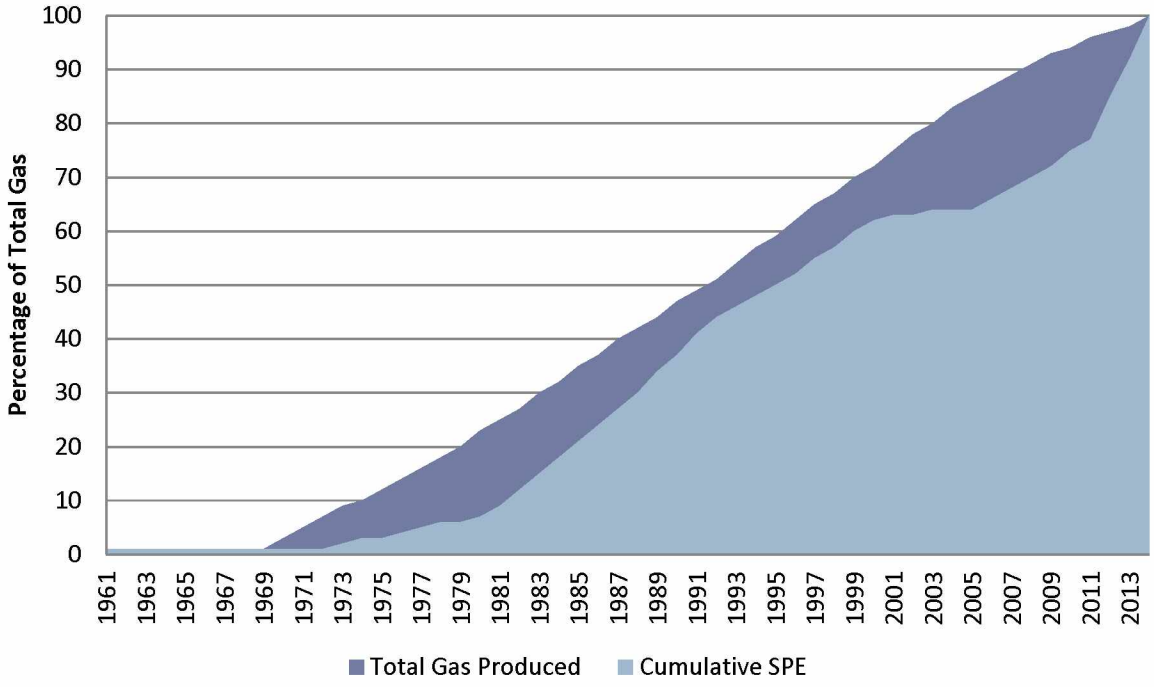


Figure 16 uses the total natural gas produced to date as 100% of reserves and similarly plots the cumulative SPE links against it.

Figure 14: Cook Inlet Gas Reserves Produced and Cumulative SPE Chain Links

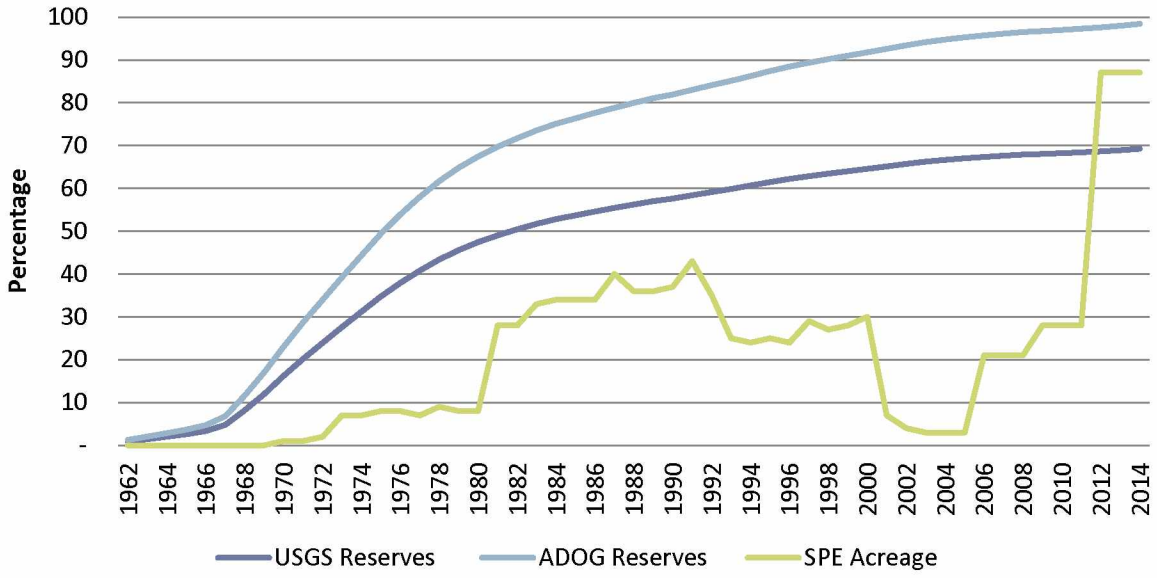


The results of Figures 15 and 16 support the conclusion that SPE are increasingly making up the chain-of-title for Cook Inlet leases. A conclusion further buttressed by the fact that SPE own roughly 90% of the acreage in study leases.

Cursory observations of the Chain-of-Title spreadsheet's basin wide history appear to show years where there is a particularly high turnover of leases, such as 1972, 1981, 1987, 1992, 2007 and 2012. These years are examined to uncover if they represent an influx or decrease in the amount of acreage under SPE ownership; and whether there may be levels of production or commodity prices that could be triggering these transfers.

Figure 17 plots the bracketed percentage of oil reserves produced against the percentage of acreage in Cook Inlet owned by SPE. This graph reveals the entrance and exit of SPE that may not be fully illustrated in the cumulative shares analysis.

Figure 15: Cook Inlet Oil Production and Percentage of SPE Acreage



Examination of this chart suggests that once the produced reserves reached 70% of the ADOG estimates and 50% of the USGS estimates there is a sharp increase in the acreage held by SPE. This may reveal that original lessees are ready to move on when a field reaches maturity, and that SPE are attracted to this sort of established basin. While it may not have been possible for those in the inlet at the time to have known the percentage of ultimate reserves produced, they could have been able to tell

if peak production had passed by monitoring basin wide production reports. Therefore, the amount of actual oil production against percentage of SPE acreage is show in Figure 18.

Figure 16: Annual Cook Inlet Oil Production by the Barrel and SPE Acreage

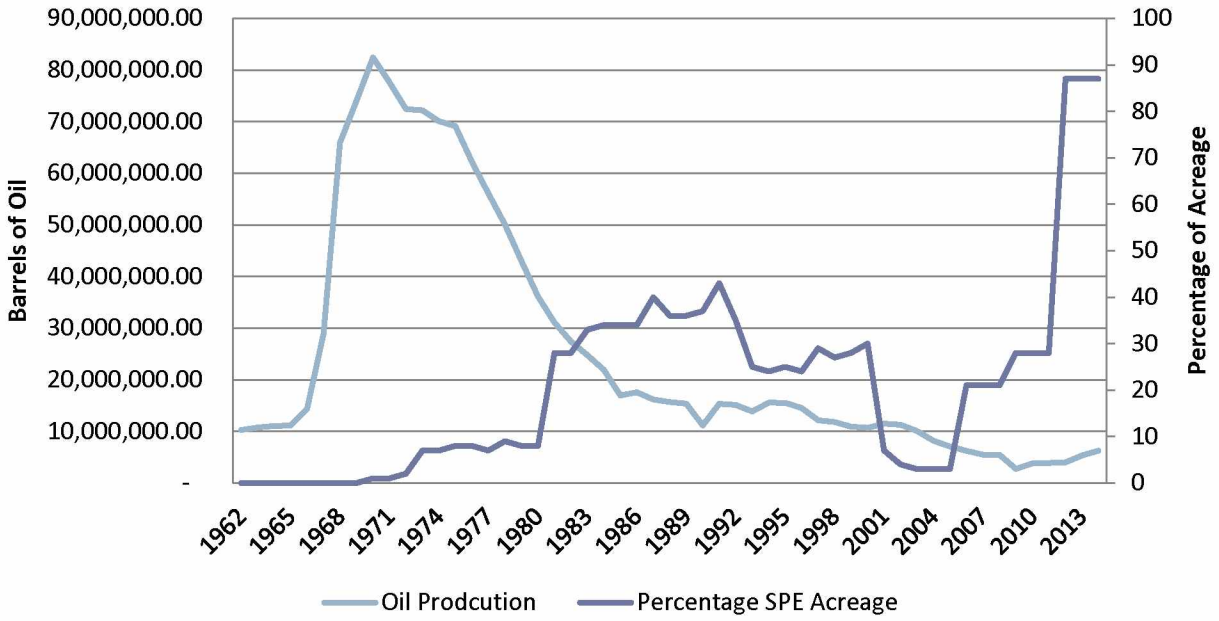
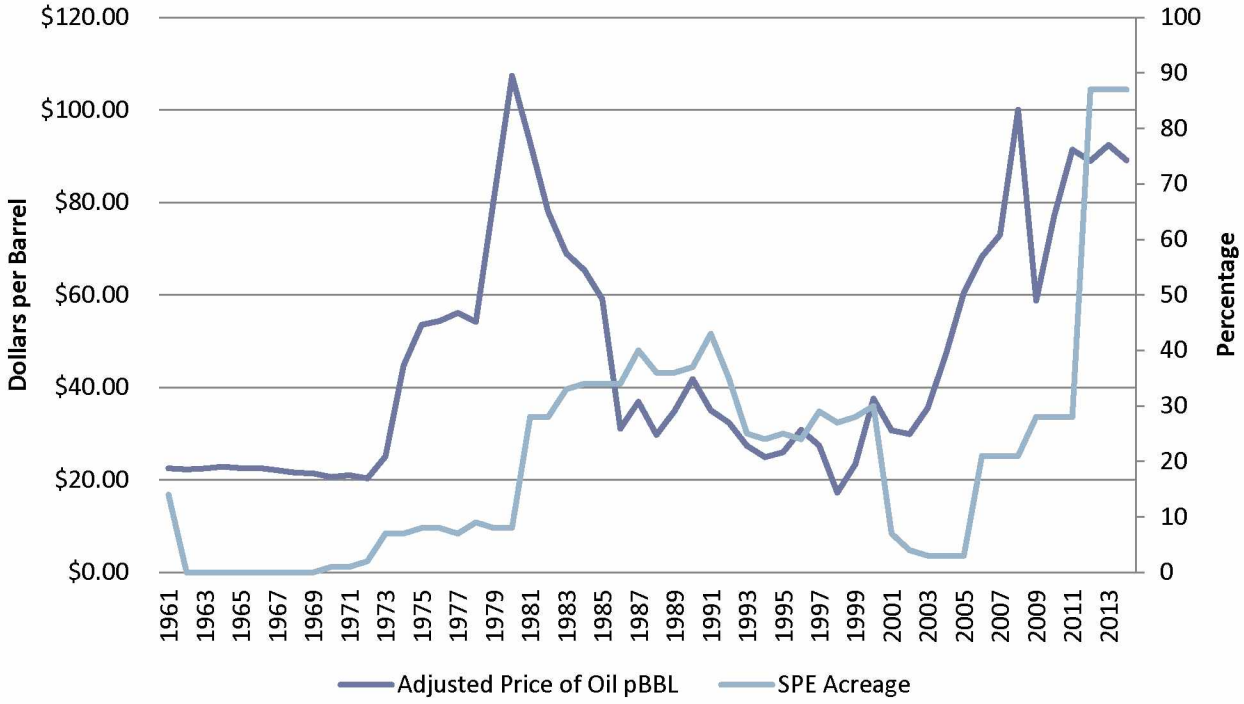


Figure 18 further supports that SPE begin to increase their share of acreage once peak production has passed. These graphs also indicate that production may not be the only driver, as there is not a smooth increase in SPE as reserves decline. This project also looks at whether commodity pricing could account for this discrepancy by plotting the percentage of SPE acreage against the adjusted annual average cost per barrel of oil in Figure 19 (McMahon, 2014). The original price has been adjusted to reflect its equivalent in 2014 dollars.

Figure 17: Annual Oil Price Adjusted for Inflation and Cook Inlet SPE Acreage



The shapes of the lines in Figure 19 suggest that SPE follow market cues for their presence in an oil field. When oil prices rise sharply, SPE appear in greater numbers a couple of years later. Similarly, the drop in commodity prices in the late 1990s precipitated a sharp exit of SPE in the early 2000s. This couple year delay can be accounted for by the time that it takes to set up a company, work out commercial deals, and receive transfer approval from ADNR. Although this study was unable to fully address this relationship, future analysis would benefit from some sort of regression to see if this visual relationship has numeric merit.

Analysis of the production and pricing indicators suggest that SPE may opportunistically move into oil fields when peak production has passed and large corporations are ready to move on. Further, their business model may be based upon a high enough price per barrel to continue extraction from maturing fields. When that price point is not met, they exit. Once they exit, the likelihood of their continued corporate existence is notably less than that of other companies.

Conclusion

This project demonstrates that non-bonded coverage in Cook Inlet exposes the state to the risk of DR&R liability. The first layer of protection, current lessee capacity, can be jeopardized overnight by dynamic forces, such as commodity pricing. Even without the influence of external factors, the default probability of current lessees is predominantly medium risk or greater. The chain-of-title theory, which the state holds as an ultimate assurance, becomes more precarious as the links of the chain increase in number and weaker links are introduced. Analysis in this study shows that the number of weak links, qualified here as special purpose entities, has indeed increased over time as the hydrocarbons in the ground reach the end of their reserves.

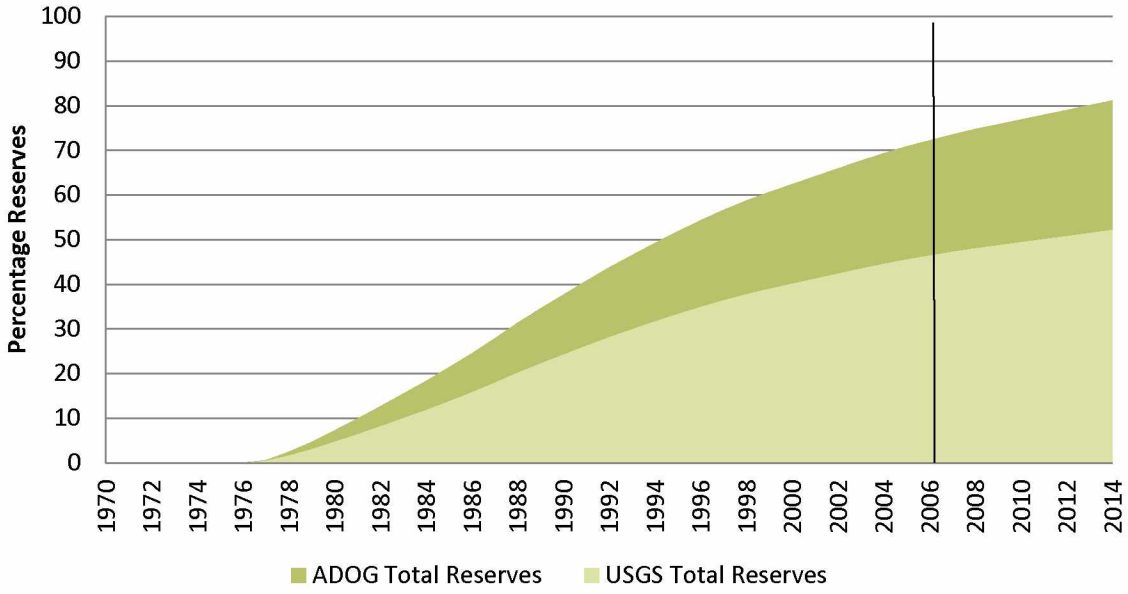
State exposure is particularly acute when aging fields turn over to small entities. The state may institute policy measures or bonded assurances to insulate itself from this increased risk. One policy mechanism would be to shore up, or prevent special purpose entity link accumulation. More stringent standards, such as minimal requirements for corporate existence, could be set for transfers once reserves reach a certain percentage. Or, agreements could be made with the global parent of the special purpose entity that assigns the parent as the link in the chain of custody into perpetuity. In this way, even if the special purpose entity link disappears, a stronger company, with less degrees of separation likely, will be responsible.

Beyond looking at this as an issue of state liability, it may also be said that when companies are firmly on the hook, their liability becomes the state's asset. The state may decide to allow the abandonment in place or other partial removal of hydrocarbon infrastructure. California, Louisiana, and Texas all have programs that allow offshore platforms to be toppled in place, as a part of a rigs-to-reefs program, or left as navigational aids. These programs require that 50% of the cost that would have been spent on complete DR&R be placed into a state account to be used for residual liability or conservation purposes (Arcadis, 2014). The state may want to consider the establishment of such a program, or the tying of bonded assurances to the amount that would be put into one of these liability accounts.

It may be too late to significantly impact the chain-of-title for Cook Inlet. Reserves are low by any estimation, and weak link accumulation is already rampant. However, the lessons learned from Cook Inlet experience could potentially protect the state from facing a similar situation with the North

Slope. Shown in Figure 18, around 2006 the North Slope fields of Alaska reached the reserve level that triggered turnover of leases to special purpose entities in Cook Inlet.

Figure 18 High and Low Estimates of North Slope Produced Reserves



In April, 2014, BP agreed to sell 15% of its assets in the North Slope to Hilcorp Alaska LLC (DeMarban, 2014). This transfer represents the first divesture of a large corporation on the North Slope to a smaller company. If history is any indicator, this is only the first of what will become an increasing trend. The nature and liability of DR&R obligations on the North Slope is several orders of magnitude greater than that of Cook Inlet. Policy decisions made now could make the chain-of-title theory a non-bonded coverage that the state could more readily rely upon in the future.

Appendix A: Bonded Coverage

This Appendix provides an introduction to the bonding requirements for hydrocarbon development in Alaska, shows the mechanisms used for current lessees, and discusses some of the implications for the bonded coverage.

Lease language and regulations require performance bonds to help ensure contract obligations are met. These bonds are handled through the AOGCC and the ADNR. Each agency has established minimum bonding standards based on per well or per acre calculations, as well as the option to post statewide bonds. For the table of bonded coverage provided, this study assumes that all companies have elected to post the statewide bond.

In addition to this baseline bonding, ADNR may,

> Require a bond in a reasonable amount greater than the amount specified above in this paragraph where such greater amount is justified by the nature of the surface and its uses and improvements in the vicinity of said land and the degrees of risk involved with said operations being or to be carried out under the lease (ADOG, 2009).

ADNR wields this authority in a way that allows them to collect this extraordinary amount through means other than surety bonds, such as escrow accounts and parent guarantees. The extent of these backstops can be found in Assignment Approvals, Financial Assurances Agreements, court case documents, and Abandonment Agreements that are kept in the lease and unit case files. In addition, Unit agreement language contains provisions creating joint liability for resources held in common to produce participating areas.

Table 5 summarizes the extent of the bonded coverage available. It is arranged from left to right according to the order in which the backstops would need to be called upon. As a point of reference for these protections, the second column indicates the approximate percentage of acreage held by each company in Cook Inlet. Companies showing a 0% WIO holding have less than 1% of the acreage under their contracts. Moreover, the percentage of acreage does not necessarily correspond to the potential financial burden of their DR&R liabilities. For instance, XTO Energy Inc holds only two leases, ADL 18754 and 18756. On these two leases are two of the twelve operating offshore platforms; therefore, their share of DR&R in the inlet would be greater than the 1%.

Table 5 Bonded Coverage

Company	% WIO	D&B Risk	ADNR Bond	AOGCC Bond	Additional Surety	Escrow Account	Parent Guarantee	Unit Agreements
Apache Alaska Co	2%	Medium	$ 500,000.00	$ 200,000.00				Nicolai Creek
Aurora Gas LLC	7%	Low	$ 500,000.00	$ 200,000.00				Nicolai Creek, North Trading Bay
Buccaneer Alaska LLC	0%	High	$ 500,000.00	$ 200,000.00				
ConocoPhillips Alaska Inc	5%	Low	$ 500,000.00	$ 200,000.00				Nicolai Creek, North Cook Inlet, North Trading Bay
ConocoPhillips Company	4%	Low	$ 500,000.00	$ 200,000.00				North Cook Inlet
Cook Inlet Energy LLC	7%	High	$ 500,000.00	$ 200,000.00	$6,600,000.00 in bonds inherited from previous owners	$2,500,000 (balance as of 2/15). Periodic contributions pending	Miller Energy Resources: Unconditional guarantee	North Trading Bay, Trading Bay
ExxonMobil Oil	0%	Low	$ 500,000.00	$ 200,000.00				
Hilcorp Alaska LLC	74%	Medium	$ 500,000.00	$ 200,000.00	$105,000,000.00		Hilcorp Energy I, L.P. guarantee cap of $17,150,000.00	Nicolai Creek, North Trading Bay, Trading Bay
XTO Energy Inc	1%	Low	$ 500,000.00	$ 200,000.00	$3,000,000.00	Abandonment fund to equal $31,000,000.00. Payments to begin when sum of fund plus NPV of reserves less than 150% of est. DR&R costs		

ADNR chooses to require additional bonding and protections for 80% of the acreage in Cook Inlet, and 15 of the 16 platforms. The only offshore platform without extraordinary bonding is the Tyonek platform in North Cook Inlet, which is held by two subsidiaries of ConocoPhillips Corp, ConocoPhillips Alaska and the ConocoPhillips Company. Determining the adequacy of these protections is not prudent without a clear picture of the performance standards or cost estimates for DR&R performance. There are some inferences that can be made based on the data available.

XTO Energy Inc is the only company required to use a sinking fund. This fund was established in 1998 when the estimated decommissioning date for the two platforms it serves was 2009. This fund allows XTO Energy Inc, whom at the time of transfer was called Cross Timbers Oil, to defer payments until the value of the reserves dips below 150% of the Net Present Value of the estimated cost of DR&R. The general estimates for how these payments would be structured are from Exhibit C of the Abandonment Funding Agreement, and shown in Figure 19 (Boy, 1999).

Figure 19 Example Payment Schedule from XTO Abandonment Agreement

Initial payment begins when the sum of the NPV of the fund and reserves<150% of the present value of the abandonment costs.
For illustrative purposes, the principle of the fund is assumed to grow at an annual rate of 5%.

(thousands of dollars) (,000)

End of	Assumed NPV of Reserves @ 15%	Estimated Value of Fund before payment	SUM of Fund and NPV Reserves	150% of PV of $31MM DR&R @5% or limit of fund	Difference between 150%PV & SUM	Date Report Prepared and Payment Made	Annual Payment	Annual Withdrawal
1998	$44,429	$0	$44,429	$27,859	$16,570	1-May-99	$0	$0
1999	$42,073	$0	$42,073	$28,547	$13,526	1-May-00	$0	$0
2000	$34,495	$0	$34,495	$29,974	$4,520	1-May-01	$0	$0
2001	$25,168	$0	$25,168	$31,473	-$6,305	1-May-02	$6,305	$0
2002	$17,820	$6,620	$24,440	$33,047	-$8,607	1-May-03	$8,607	$0
2003	$12,039	$15,988	$28,027	$34,699	-$6,672	1-May-04	$6,672	$0
2004	$7,736	$23,793	$31,529	$36,434	-$4,905	1-May-05	$4,905	$0
2005	$4,757	$30,133	$34,890	$38,256	-$3,365	1-May-06	$867	$0
2006	$2,747	$31,000	$33,747	*$31,000*	$2,747	1-May-07	$0	$1,550
2007	$1,439	$31,000	$32,439	*$31,000*	$1,439	1-May-08	$0	$1,550
2008	$636	$31,000	$31,636	*$31,000*	$636	1-May-09	$0	$1,550
2009	$193	$31,000	$31,193	*$31,000*	$193	1-May-10	$0	$1,550
2010	*$193*	*$32,550*	*$32,743*	*$32,550*	*$193*	1-May-11	*$0*	*$0*
2011	*$193*	*$34,178*	*$34,370*	*$34,178*	*$193*	1-May-12	*$0*	*$0*
2012	*$193*	*$35,545*	*$35,737*	*$35,886*	*-$149*	1-May-13	*$149*	*$0*

NOTES:

1) Cross Timbers will make contributions to the fund through 2009 whenever the sum of a) the value of the fund and b) the NPV of the reserves is less than the PV of 150% of DR&R, until the fund reaches $31MM. After the fund reaches its limit of $31MM through 2009, or $31 MM compounded @ 5% thereafter, any excess earnings of the fund are available for withdrawal by Cross Timbers.
2) In this example, during the year 2006, and until after 2009, withdrawals are made from the fund for the balance over $31MM. In 2005, the balance of the sinking fund is only $867,000 below the ceiling of $31MM so the payment is limited to that amount.
No withdrawals are made after 2009 when the fund's assumed earnings of 5% equal the stipulated 5% compounding of the abandonment cost.
3) If abandonment occurs beyond 2009, the $31MM abandonment cost grows by 5% annually compounded
and likewise the $31MM ceiling of the sinking fund increases at a compounded rate of 5%.
4) The year 2012 demonstrates that if the fund generates only 4% return instead of 5%, then a fund payment is made by Cross Timbers for the difference between the sum of the npv of the reserves and sinking fund, and the compounded cost of the abandonment costs.

Smaller companies that enter Cook Inlet contend that large extraordinary bonding is a hindrance to investment and exploration because it uses up any capital a company may have upfront. By structuring these payments in such a way, this sinking fund appears to offer a solution to this problem by making the payments in smaller portions spread out over a few years. Further, it allows investments to the fund to gain interest, increasing the value of the account without extra expenditures by the company. The example shown even allows for withdraws to be made by the company once the agreed upon sum has been met.

The state did not use this sinking fund as its only backstop. It also required a $3,000,000 upfront performance bond should XTO Energy Inc not remain long enough for the fund to reach maturity. These bonds are then further supported by a guarantee that Shell, the previous owner, remains liable as a surety for all obligations. Indeed, of all the bonded assurances in Cook Inlet, those covering the XTO A and C platforms are by far the most robust.

Hilcorp Alaska LLC owns the majority of the infrastructure and acreage in Cook Inlet. Since 2011, they purchased WIO from PERL, Marathon Alaska Production LLC, ExxonMobil Oil, Aurora Gas LLC, and Union Oil Co. For each of these transfers, the state added amendments to the Financial Assurance Agreement (FAA) negotiated with the original transfer. The most recent version, from November 2014, also includes assets purchased from BP on the North Slope.

For the Cook Inlet properties, the state required Hilcorp Alaska LLC to post a $105,000,000 surety bond. This bond is further backed by a parent guarantee from Hilcorp Energy I. L.P. capped at $17,150,000. An interesting feature of this FAA is the means by which these figures are calculated. Every three years, Hilcorp Alaska LLC must have a third party contractor perform a cost estimate of the DR&R obligations. The bonding and parent guarantee are to continually evolve to equal 17.5% of the estimated DR&R cost minus Union's reimbursement obligations to Hilcorp, per their PSA. There is no rationale provided, however, as to why 17.5% is deemed to be a sufficient enough of a backstop for the state, especially when entities such as XTO Energy Inc are expected to eventually secure 100% of the expected cost. These differing figures highlight how without clear performance standards the actions and securities required by the state can change with administrations.

Cook Inlet Energy LLC can be considered one of the most high risk lessees presently in Cook Inlet. It also happened to inherit a platform and unit with a high risk history. The original installer of the Osprey platform, located in the Redoubt Unit, was Forcenergy, a company that went bankrupt before

the project was complete. Since that time, the property was also owned by Pacific Energy Alaska Operations LLC, the subsidiary of the bankrupt PERL. The state retained the $3 million and $3.6 million in bonds it collected from Forcenergy and PERL and keeps them in an account for eventual DR&R. In addition to this, the state has set up an escrow account that Cook Inlet Energy LLC periodically submits to. Estimates received from the Commercial Division at ADOG have the balance at approximately $2.5 million as of February 2015.

Using the cost estimates in Appendix B, the total value of bonded coverage in Cook Inlet is approximately 20 – 25% of the total estimated cost of DR&R performance.

Appendix B: Cost Estimates

According to existing policy, the DR&R of offshore platforms could be as minimal as the P&A standards of the AOGCC; or, it could mean complete removal of the structure and the restoration of the sea floor. For this reason, prior attempts at creating a cost estimate for this obligation have produced a wide range of potential values. For a general understanding, the following estimates have been pulled from a variety of public documents.

- The Abandonment Agreement between the state and Cross Timbers Oil Co in 1998 estimates the cost of DR&R for the XTO A and XTO C platforms to be *$31,000,000.00* (Boy, 1999).
- Pacific Energy Resources Ltd. bankruptcy documents from 2009 estimate the cost of abandonment of the Spurr platform to be between *$21,000,000 and $35,000,000* (PERL Banuptcy Proceedings, 2009).
- The Financial Assurances Agreement between the state and Hilcorp Alaska LLC from November 2014 estimates that the DR&R of twelve platforms and associated infrastructure and facilities on their share of leases in Cook Inlet to cost ~ *$700,000,000* (ADNR, 2014).
- A Cook Inlet Keeper report calculates the total cost to DR&R all 16 offshore platforms and 160 miles of oil pipelines ranging between *$402,000,000 and $1.1 billion* (Talberth, 2013)

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